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CONTENTS

ORIGINAL ARTICLES.

	PAGE
Treatment of Infected Wounds, With Demonstration of the Carrel-Dakin Technic. Cyrus B. Gardner, Capt. M. C. U. S. A.	1
A Case of Bilateral Sinus Thrombosis From a Carbuncle on the Neck in Latent Influenza. Louie V. Stegman, M.D.	9
Treatment of Septic and Injured Joints. Frederick C. Kidner, M.D., F.A.C.S.	16
Non-Tuberculous Pleurisy. J. Stuart Pritchard, M.D.	20
Ectopic Gestation and Ruptured Graffian Follicle, Resume of a Series of Cases of. Clark D. Brooks, M.D. and William R. Clinton, M.D.	22

	PAGE
Active Pulmonary Edema, The Commoner Clinical Types of, and Their Treatment. W. H. Marshall, M.D.	23
Anniversary of the Founding of the Detroit Academy of Medicine, Address Delivered at the. Walter P. Manton, M.D.	26
Value of the Ophthalmoscope in the Diagnosis and Prognosis of Systemic Disease, with Illustrative Case Histories. D. E. Godwin, M.D.	31
Importance of Physical Findings in Late Syphilis. Case Report. Albert M. Crance, M.D.	33
Gunshot Wound of the Bladder. B. H. Van Leuven, M.D.	35

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CONTENTS—Continued

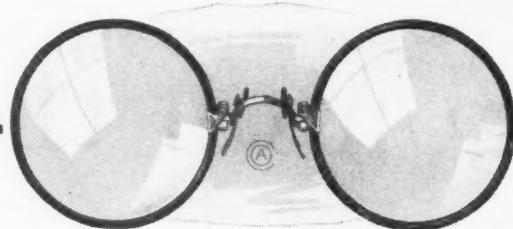
EDITORIAL	PAGE
Annual Meeting	37
Fee Schedule	37
The New Year	39
Compulsory Insurance	40
Membership in the State Society	42
Endarteritis Obliterans	43
Editorial Comments	47
 DEATHS	
Dr. George Duffield	48
Dr. L. J. Goux	49
Dr. Richard Leliman	49
Dr. W. R. Dittmars	49
Dr. L. R. Lumby	49
 STATE AND SOCIETY NEWS.	
State News Notes	50
Barry County	53
Genesee County	54
Kent County	54
Sanilac County	55
 BOOK REVIEWS.	
Nervous and Mental Diseases. By Archibald Church, M.D., and Frederick Peterson, M.D.	55
A Text-Book Upon the Pathogenic Bacteria and Protozoa. For Students of Medicine and Physicians. By Joseph McFarland, M.D.	55
Manual of Obstetrics. By Edward P. Davis, M.D., F.A.C.S.	55
Miscellany	55

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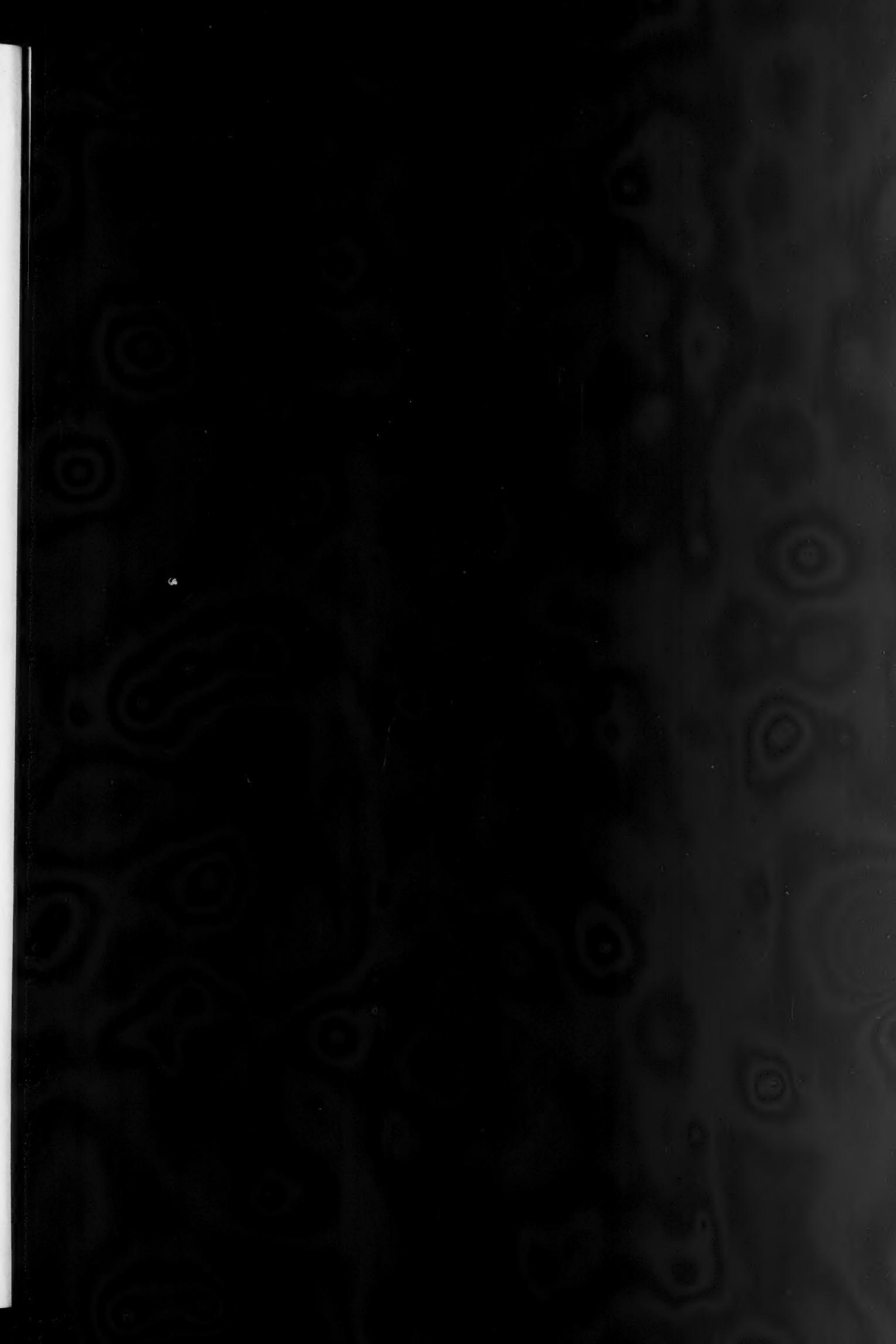
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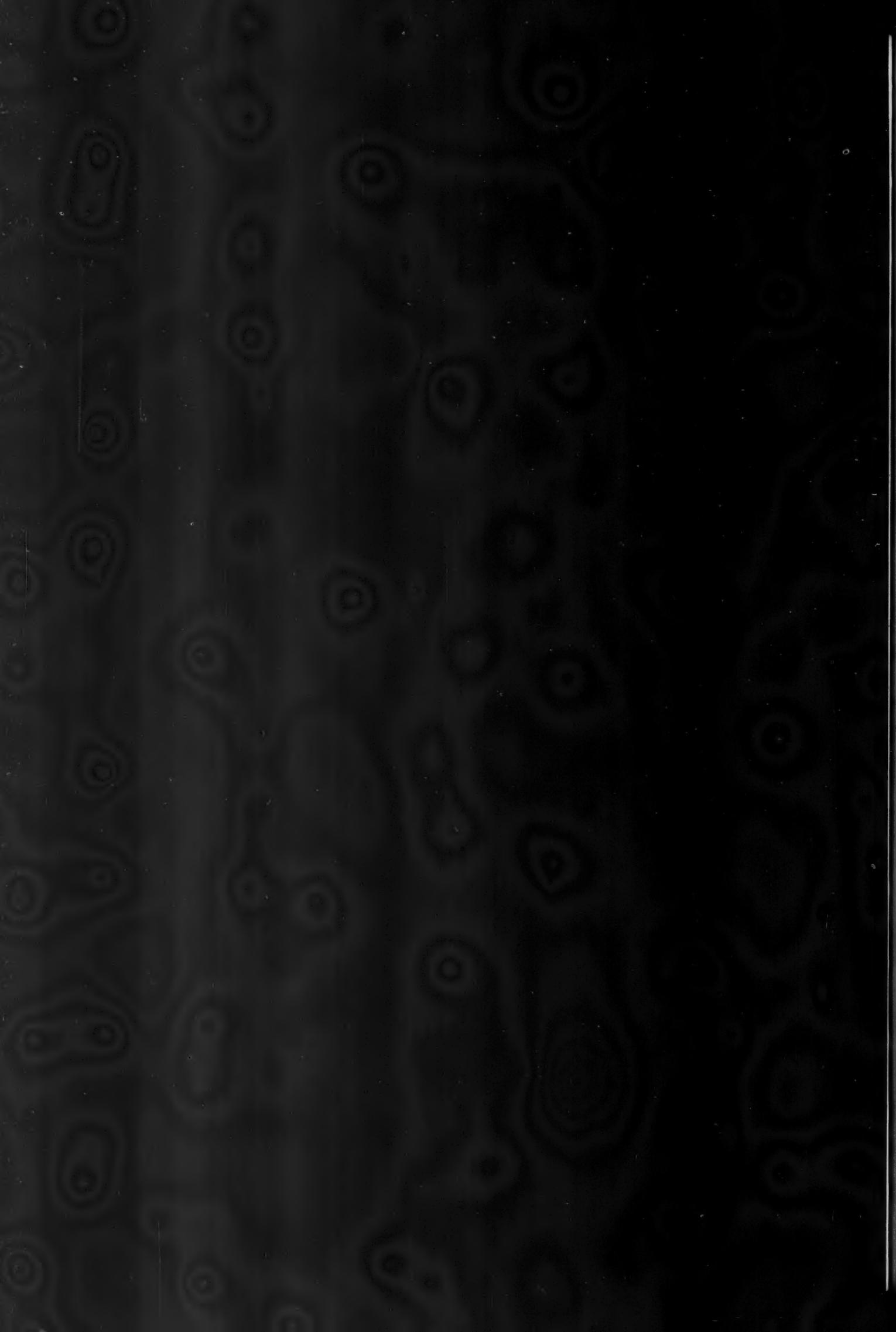
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The Journal OF THE Michigan State Medical Society

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Vol. XIX

GRAND RAPIDS, MICHIGAN, JANUARY, 1920

No. 1

Original Articles

THE TREATMENT OF INFECTED WOUNDS WITH DEMONSTRA- TION OF THE CARREL- DAKIN TECHNIC.

CYRUS B. GARDNER, Capt. M. C. U. S. A.

The present attitude towards and the treatment of an infected wound presents a striking and peculiar contrast to that which obtained a semidecade ago. In the pre-war days, the patients with suppurative processes were given scant attention, little or nothing being done to arrest the process. Nature was left to work out her own salvation and did so oftentimes with ugly deformities, troublesome scars and function destroying adhesions. The attitude towards those unfortunate victims was one of undisguised pessimism. Frequently the uninitiated and unskilled hospital orderly dressed their wounds and was otherwise charged with their care. Until the suppurative process was arrested, these patients were beneath the dignity of the skilled surgeon.

Now all this has changed. Today the victim of a suppurating wound is entitled to and receives the detailed care and attention so essential to his recovery.

Early in 1915 it was demonstrated and became an established fact that an infected wound could be made bacteria free. This is tantamount to saying that at last an antiseptic had been found which, while capable of inhibiting and destroying germ growth was not of itself harmful to the tissues.

That such an antiseptic existed was entirely at variance with the then modern and already traditional belief and practice.

Surgeons practiced, "aseptic" not "antiseptic" surgery and eagerly decried the announcement that any such potent bactericide had been discovered.

It was believed by a goodly number that such

an agent was beyond the realm of possibility and its advent should not be expected. In this connection, therefore, the new antiseptics, viz., the hyochlorite of soda and the chloramines met with the same sort of reception that had been accorded other discoveries in medicine.

This prejudice and opposition on the part of men of high standing in the profession is a lamentably sad commentary on the vaunted open-mindedness of the members of honored calling. However, this is in passing and at this date there is little or no opposition; the value of the method can no longer be denied. That poetic justice may be given suffice is to say that almost without exception, "those who came to scoff remained to pray." In fairness to American physicians, I hasten to add that the destructive criticism mentioned above does not apply with equal force.

A discussion, however, brief of the modern or Carrel-Dakin treatment of infected wounds divides itself naturally under four heads as follows:¹

1. Mechanical cleansing.
2. Chemical sterilization.
3. Bacteriological control.
4. Closure.

MECHANICAL CLEANSING.

1. *Debridement.*—The extent of the surgical procedure, which has for its object not only the mechanical cleansing but the preparation of the wound for the distributing tubes, will depend upon the time which has elapsed since the receipt of the injury. If seen before the onset of inflammation or in the so-called pre-inflammatory period this primary surgical interference should be most thorough.

Carrel and Dehelly say "there is no call for hesitation in making very free incisions because they can be brought together again after a few days. Extensive opening up of soft parts nearly always yields earlier closing." In the preparation of the surrounding skin, the use of iodine

1. Rockefeller Institute notes.

is enjoined as its use greatly predisposes to later subsequent irritation from the hypochlorite solution. Vigorous mechanical cleansing with a free use of neutral sodium cleate and sterile water with alcohol or ether will suffice. Now is the time to remove foreign bodies, especially, shreds of clothing, detached fragments of bone, contused and badly damaged tissue, including skin edge and blood clots. Care should be exercised not to increase the amount of traumatism by a too brisk use of the gauze swab. The latter spreads, does not remove the infection. The already dead or badly devitalized tissue should be removed by a sharp cutting instrument. For this purpose nothing is better than a keen-edged razor. To remove minute shreds of clothing impregnating tissue, it is necessary to remove the tissue itself for all such tissue is sure to become necrosed. Bits of clothing carry the worst type of infection and sloughing tissue is the best possible culture media. The inference therefore is obvious.

In the mechanical cleansing of a compound fracture, certain special precautions are to be observed as follows:

- A. Sufficiently long incisions to admit of a careful inspection of the seat of fracture;
- B. Conservatism in the removal of bone and periostium (up to the 23rd year the periostium has osteogenetic powers). Splinters which are lying free are of course, removed but all splinters with adherent periostium are to be preserved;
- C. In longitudinal fractures the exposed marrow is removed;
- D. Instillation tubes should be placed as closely as possible in contact with bone at seat of fracture.

Failure to observe the admonition against a too free removal of bone and periostium will lead to unhappy functional results.

[A study of war wounds at the War Demonstration Hospital—Rockefeller Institute—and at U. S. A. General Hospital No. 35, West Baden, Ind., at which latter place the writer was in charge of Carrel-Dakin work, together with a perusal of recent literature forms the basis for the subject matter of this article.]

The drainage of most wounds which are to be subjected to the Carrel-Dakin instillation treatment is quite different from the method previously taught and practiced. It is not necessary to make counter openings at the dependent points.

Contact of the antiseptic being one of the essentials in the chemical sterilization of a wound it follows as a necessary corollary that all openings at dependent points for the purpose of drainage are contra indicated. One exception is empyema where dependent drainage is necessary that there may be no interference with lung expansion.

[The writer appreciates the healthy difference of opinion obtaining among physicians as to the better, or rather best, way of treating empyema. A moderate experience warrants the following conclusions:

- 1. In the face of poor drainage, the result of inadequate surgery, results will not be obtained from the instillation of Dakin's solution.
- 2. Costectomy at the most dependent point of the pleural cavity (and the way to determine the really dependent point is by insertion of the finger in the pleural cavity at the time of operation,) followed by instillation of Dakin's Solution will aid materially in reducing the morbidity and make the necessity for extensive secondary operations on the chest very rare. Complete healing usually results in 35 days.]

Adequate drainage will be provided by long incisions placed anteriorly, the openings being maintained by short heavy drainage tubes placed parallel to the incisions.

The incidence of the inflammatory period after the receipt of an injury is a varying one within narrow limits. Usually infection is well established during the 24-36 hour period. At this time the greatest circumspection must be practiced in the manipulation or surgical interference of an infected wound, whether of the soft parts or of bones. Radical surgical measures at the time of active inflammation is analogous to the surgical traumatism produced by searching out and removing the appendix during the 96 hour period and is only mentioned to be condemned. The use of a scalpel in a wound from which serum is exuding is an exceedingly dangerous procedure. It will be seen therefore that it is important to limit ones surgical activity to the barest necessity. Usually it is possible to insert the instillation tubes with very little manipulation and this must suffice. The only exception being muscle involvement when it is necessary to open the focus of infection as well as to remove easily reached homomata. It is not well to seek for foreign bodies nor to attempt to remove splinters from the seat of fracture; incisions should be kept widely open and instillation tubes placed in every di-

verticulum. Finally the limb should be kept rigidly immobilized, not only to relieve pain but to prevent bacterial dissemination by muscle action. For this nothing suffices like the overhead apparatus. After the infection has been reduced by the chemical instillation complete surgical interference may be inaugurated. Then under anesthesia the necessary surgical procedure may be carried out, foreign bodies, sequestra and necrosed tissue being removed. Certain precautions are to be observed in operations in or thru cicatricial tissue for the reason that in a wound which has undergone complete cicatrization microbes remain latent for an indefinite period.² These secondary operation wounds which have undergone prolonged suppuration should not, therefore, be sutured. As will be indicated later the sutures may be put in place in certain instances, instillation continued and the complete closure made after the lapse of a few days. The use of instillation tubes is imperative to prevent lighting up old infections. An illustration of this is the all to frequent infection following bone graft. This may be obviated by the two stage operation. The extremities of the bones being first prepared, subjected to the antiseptic for a few days when, if sterilization remains complete, the graft may be placed and the closure of the soft parts effected. In this way only may unpleasant results be avoided. A study of a number of war wounds resulting in osteomyelitis warrants the following conclusions:

1. Successful suture generally impossible in operations made in or through wounds which have undergone prolonged suppuration.
2. Successful bone graft for non-union only to be expected if the two stage operation is performed.
3. The operation of sequestrectomy for bone which appears rarified (by X-ray) not to be insisted upon in the absence of suppuration.

In all operations made necessary by traumatism absolute hemostasis must be secured before the toilet of the wound can be considered complete. In injuries to the large blood vessels, ligatures must be placed both above and below the injured area. Silk or plain catgut should not be used as ligature material. As may be readily demonstrated both, especially the former, are quickly dissolved by Dakin's solution. Chromic catgut or linen only are to

². If not previously recently immunized, the patient should receive a prophylactic dose of antitetanic serum.

be used. The principal objection to the latter being that which applies to all non-absorbable material.

2. CHEMICAL STERILIZATION APPARATUS.

The Carrel-Dakin technic implies the use of special but simple apparatus.

The Reservoir or Containers.—This is an amber colored, graduated (metric system) flask of 1000 cc. capacity for the purpose of holding the antiseptic. The upper end should be cup shaped to facilitate the introduction of the fluid and provision will be made for the inlet of air. It is held in position by a suitable standard (providing a range of from 50 to 120 cm. elevation) fastened to the bed. Care should be exercised in the manufacture of the containers that the glass is not so dark as to interfere with the reading of the height of fluid. It is important that the lower end have an opening of 7 mm. and so shaped that the conducting tube which also has an inner diameter of 7 mm. clasps it firmly.

The glass distributing tubes serve to make the connection between the conducting tube and the small rubber distributing tubes. The end joining the conducting tube being 7 mm. and the opposite end or opening 3-4 mm. internal diameter. The conducting tube should carry a spring pinch cock 10 cm. below the opening in the reservoir.

Small rubber distributing or instillation tubes. These should be of good quality with a wall thickness of 1 mm. and an internal diameter of 3-4 mm. There are four regular sizes Nos. 5, 10, 15 and 20 of the perforated non-covered type. The ends of these tubes are tied off with linen thread. The perforations which are .5 mm. in diameter are through and through 1 cm. apart and made on alternate sides of the tube. Nos. 5 and 10 are 30 cm. in length, Nos. 15 and 20 are 40 cm. in length. The number of the tube indicates the distance the perforations extend from the tied off end.

Covered tubes: These tubes are covered with Turkish (bath) toweling which should extend from the tied off end to a point 1 cm. beyond the last perforation. The size and numbering of these tubes correspond exactly to the plain or non-covered type. The perforations, however, are 1 mm. in diameter. A piece of linen thread with double ends may be tied to the toweling to be used as a guy rope to hold the tube in place.

Lateral opening tubes: 30 cm. in length; open end with a narrow slit 3 cm. from end.

Empyema tubes are 50 cm. in length with .5 mm. perforations for 10 cm. The tubes may be stiffened by the insertion of 22 gauge silver wire 30 cm. in length.

Loop Tubes: 70 cm. in length .5 mm. perforations extending 10 cm. in either direction from centre of tube.

THE DRESSING.

To protect his patient as well as himself, the surgeon will wear rubber gloves and a sterile gown. All dressing material will be handled with dressing forceps. The surgeon also will avoid conversation while facing or looking directly into the wound. The soiled dressings having been removed (by a nurse who will precede, especially in hospital ward work) the surgeon will clean the surrounding skin with pledgets of gauze using neutral soap and water and lastly ether. He will then change dressing forceps and clean the wound and all its recesses, using gauze sponges, neutral sodium oleate and sterile water. With the spring dressing forceps all debris is removed from the wound which is dried by gently pressing a small piece of gauze over its surface. This procedure will suffice to take up the moisture left after cleaning. Under no circumstances are alcohol or ether to be used on the wound surface. Minute amounts remaining would destroy the hypochlorite solution instilled immediately after the dressing. A wound which is being successfully treated has no odor.

There are no hard and fast rules regarding the number and arrangement of tubes to be used in a wound. Suffice it is to say that the number and arrangement should be such as to insure an abundant and fresh supply of the hypochlorite at each 2 hour instillation period. Gauze should not intervene between the instillation tubes and the tissues to be treated. Generally in the irregular trench-like wounds the various sized perforated tubes are indicated. The puncture-like wounds on the anterior or superior surfaces may be successfully laked with lateral opening tubes.

Covered tubes should not be used in the presence of much wound secretion. Dakin's solution loses its identity and hence its usefulness in passing through a covered tube in the meshes of which pus is contained. The chief use of these tubes is on surface wounds where there is little secretion.

The tubes may be held in place by gauze sponges soaked in the hypochlorite solution. These gauze sponges serve the triple purpose of holding the tubes in place, taking up any excess of the antiseptic and absorbing the wound secretions. A string with double ends fastened to the tube and tied about the limb or made secure with adhesive strips is a measure which will insure security of a tube.

It is not necessary to change the instillation tubes at each dressing. Their patency, however, should be made certain by testing either by connection up with the reservoir or by means of a 20 cc. special urethral syringe.

PROTECTING THE SKIN.

Since the hypochlorite is more or less irritating to the normal skin the latter must be protected. This is done by placing about the margin strips of gauze—a convenient size is 8 x 16 cm.—impregnated with the following:

Vaseline	91%
Paraffin	6%
Resin	3%

This mixture is melted, poured over the gauze strips contained in a tin box and the whole sterilized in the autoclave—45 minutes at 15 pounds pressure.

The tubes in situ are then covered preferably, with a dressing of special design. It consists of four layers, gauze, absorbent cotton, a layer of non-absorbent cotton and finally the folded in cover of gauze. The absorbent side is placed over the wound. Wounds should be dressed every 24 hours. If the outer dressings are badly soaked, there are no reasons why they may not be changed at more frequent intervals without disturbing the instillation tubes.

There are various methods of supplying the wound with the antiseptic.

A. Intermittent.—The nurse in making the rounds simply presses the spring clamp for a few seconds releasing the necessary amount of liquid. This will vary in different wounds from a few cc. to as high as 150 cc.

B. Continuous instillation. Here it is necessary to interpose a screw pinch cock between the flask and the drop counter. This method cannot be recommended generally as it is suitable only for wounds requiring only one type of distributing tube.

C. Syringe. Injecting with a glass syringe the desired amount every 2 hours. This requires a separate syringe for each patient, is time consuming and generally unsatisfactory.

D. Automatic systems—both mechanical and electrical—have been devised to be used in connection with the intermittent method, not however, with satisfactory results. An intelligent and co-operating nurse corps to manipulate the first-mentioned intermittent method will be the one of choice.

3. BACTERIOLOGICAL CONTROL.

Neither the clinical aspect of the wound nor the general condition of the patient are a true guide to the bacteriological content of the former. For this reason it is necessary to study microscopically the bacterial flora of the wound secretions. There are two methods.

A. Culture. For the surgical clinician the culture method, which is infinitely more time consuming, possesses no advantage over the:

B. Smear method, which, while apparently crude gives important indications for treatment.

By means of a platinum or nichrome wire fused on a glass rod a particle of the wound secretion is spread thinly over a labeled slide showing the patient's name and if more than one, the number and location of the wound.

The instillation of the hypochlorite solution should be discontinued at least two hours before the smear is taken. Care should be taken to avoid wound debris and blood; otherwise the particle chosen from microscopical study should come from the worst part of the wound, especially necrosed tissue. The smear having been dried, should be fixed by passing "butterside" down three times thru the Bunsen burner flame and stained, preferably with carbol thionin for two minutes.³ With an oil immersion and a No. 3 eye piece the count may be made at once. From five or six to thirty fields are counted. The fewer the bacteria the more fields to count. Each patient should have a chart a glance at which will suffice to inform the surgeon the exact bacteriological status of the wound. Smears should be taken every forty-eight hours. The bacteriological examination of fresh wounds is unsatisfactory firstly because the microbes are not disseminated and secondly because of the presence of blood.

Depending upon the size and circumstances of a wound from three to ten days are required to effect sterilization. Failure to do so should lead to a careful inquiry into the technic of the instillation. Having determined its faultlessness the continued presence

of infection points indubitably to the contamination of the wound by foreign matter, sequestra, necrosed tissue or a localized osteitis.

The advisability therefore of an exploration of the wound will have to be considered.

4. CLOSURE.

Carrel and Dehelly say that primary closure of a wound is a procedure not a method. Altho practiced in the beginning primary suturing of wounds was discontinued because of disastrous results, before the war had lasted many months. As stated above the bacteriological study of the secretion from a fresh wound is absolutely valueless in affording an indication for closing. It must be remembered, however, that injuries incident to industrial activities are much less contaminated and the general rule against primary closure cannot be applied so dogmatically. Much may safely be left to the discretion of the surgeon.

Wounds of the soft parts which have shown a satisfactory bacteriological count may be closed, providing there are no general or local clinical contra indications, at the end of five or six days, especially if the instillation of the antiseptic was begun within a few hours after the receipt of the injury.

In patients in whom infection manifested itself before the inauguration of the antiseptic treatment a longer time—eight to twelve days—should elapse before closing and the secretions should have been sterile for four to five days. In compound fractures which have once been the seat of active inflammation a still longer time is required, usually a month.

If the skin is freely movable and cicatrization has not commenced, adhesive strips may be used to bring the margins of the wound together. To avoid contamination of the wound surface by the adhesive strip, the latter may be sterilized over its middle portion by holding it over the flame of the alcohol lamp. A strip of sterilized paper or celluloid may intervene between the adhesive and the wound surface.

Secondary suturing requires a general anesthetic. Adherent skin must be relieved and the skin margins freshened. Good apposition may be obtained and undue tension avoided by a free dissection of either flap. The French surgeons insert a few strands of silk worm gut for drainage, especially if at the time of closing a bacteriological count of five or six per field still obtains. They never close, however, with this count without determining the absence of

3. Ten cc. saturated solution thionin in 50 per cent. alcohol added to 100 cc. of a 2 per cent. carbolic solution.

the streptococcus and the gas bacillus. In forty-eight hours, the silk worm gut is withdrawn, the secretions obtained with it studied bacteriologically and if there are any indications of impending infection the wound is opened up and again subjected to the influence of the anti-septic.

In wounds which have undergone prolonged suppuration a different procedure may be followed to advantage for the reason that it is never safe to put sutures thru cicatrical tissues without continuing the sterilization. This requires the so-called two stage operation as follows:

Firstly the wound is prepared by a dissection up the tissues and placing the sutures. The sterilization is continued for a few days, after which the wound is closed.

DAKIN SOLUTION AND THE CHLOROMINES.

Dakin's fluid is a solution of sodium hypochlorite ($NaOCl$) which contains not less than 0.45 per cent. or more than 0.5 per cent. sodium hypochlorite; it is alkaline to alcoholic phenolphthalein, but not to powdered phenolphthalein. A solution of sodium hypochlorite which fails to meet these specifications is no longer a "Dakin's solution."

Manufacture. There are three commonly employed methods. A. Electrolyses of a sodium chloride (brine) solution. This method is particularly valuable on hospital ships. By this means a highly efficient and suitable germicide may be prepared at a minimum cost. In five minutes (of electrolytic action on salt water) a hypochlorite solution of a concentration of 1-500 results and as the hypochlorites possesses potent germicidal action in high dilutions it is possible and advisable to dilute with ordinary sea water to make a 1-1000 or any desired concentration. A specially devised cell is necessary and as this method will scarcely be used by those for whom this pamphlet is intended no description will be given.

B. By the doubled decomposition of calcium hypochlorite and sodium carbonate. The following method devised by G. E. Cullen and J. H. Austin, and known as method "B"—war demonstration hospital modification—Rockefeller Institute notes—is satisfactory in the absence of a chlorine tank.

METHOD "B"—WAR DEMONSTRATION HOSPITAL MODIFICATION.

To make about 40 liters, place in a 20 liter container the amount of bleaching powder indicated in the appended table in accordance

with the titration of the bleaching powder, and mix well with 5 liter of tap water. Shake vigorously and allow to stand for several hours.

Table for Approximately 40 Liters of Dakin's Solution.

Available Chlorine in Bleaching Powder	Bleaching Powder in 5 Liters of Water		Sodium Carbonate in 5 Liters of Water	
	Per Cent	Grams	Anhydrous	Monohydrated
20-26		800	600	700
28-34		600	420	490
36-42		500	335	380
				1600
				1140
				900

Dissolve the designated amounts of sodium carbonate in another 5 liters of tap water. (Pour the solution of sodium carbonate into the bottle containing the bleaching powder which has stood several hours, shake well, and allow the precipitated calcium carbonate to settle.) Test for complete precipitation of calcium by adding a few drops of barbonate solution to a few cc. of the clear supernatant liquid. After half an hour, siphon off the supernatant liquid through a double filter paper. This solution is a strongly alkaline hypochlorite solution of about quadruple strength, *which will keep for several weeks*. It must be neutralized and diluted for use as needed, in the following manner:

Titrate a measured sample (20 or 50 cc.) with 10 per cent. hydrochloric acid to absence of color with solid phenolphthalein. Add more powdered phenolphthalein to make sure the decolorization was due to neutralization rather than to bleaching; then calculate the amount of acid required for the volume "V" of filtrate it is desired to neutralize.

For Example: If 20 cc. of filtrate required 2 cc. of 10 per cent. hydrochloric acid, 100 cc. would require 10 cc., or 8 liters of filtrate would require 800 cc. of acid. This is to be added to the 8 liters slowly and with constant agitation.

To this solution add the same volume "V" of 6.25 per cent. solution of sodium bicarbonate, or the equivalent amount of sodium bicarbonate. (In the above example this would equal 8 liters of solution or 500 grams of sodium bicarbonate.)

Test a sample for alkalinity, as directed above, with both powdered and alcoholic phenolphthalein.

Titrate a 10 cc. sample with N/10 thiosulfate, as indicated above. Use 10 cc. of iodide solution and 5-6 cc. of acetic acid in titrating this concentrated hypochlorite solution.

Dilute the solution with tap water and verify the concentration by titrating a 10 cc. sample.

The calculation of this dilution is easily made thus:

1. Present Strength (or Titer)
- Desired Strength (or Titer)
- X Present Volume Desired Volume: and
2. Desired Volume minus Present Volume
- = Volume Water to add.

For example: If we desired a 0.48 per cent. hypochlorite solution, 10 cc. of which will require 13 cc. of N/10 thiosulphate, and we wished to dilute 3 liters of our concentrated solution, 10 cc. of which requires 32.4 cc. of thiosulphate for decolorization.

Then the present titer = 32.4

Desired titer = 13

Present Volume = 3000 cc.

Desired Volume = ?

Substituting $32.4/13 \times 3000 = 7480$ —Desired Volume.

7480 Minus 3000 = 4480 cc. water to be added.

Use of the accompanying outline insures correct order of procedure.

OUTLINE FOR METHOD "B"

1. Titrate bleaching powder.
2. Place weighed amount of bleaching powder in measured volume water.
3. Dissolve weighed amount sodium carbonate in measured volume water.
4. After several hours or over night mix carbonate and bleaching powder solution.
5. Test for complete precipitation of calcium.
6. Filter.
7. Neutralize a measured volume "V" to powdered phenolphthalein with dilute acid.
8. Add an equal volume "V" of 6.25 per cent. bicarbonate solution, or equivalent amount of the salt.
9. Test alkalinity.
10. Titrate and dilute to desired strength.
11. Verify final concentration.
12. Titrate again every 24 or 48 hours.

C. Preparation from chlorine and sodium carbonate. Because of its time saving the following method is recommended.

PREPARATION FROM CHLORINE AND SODIUM CARBONATE.

Chlorine may be obtained in liquid form in steel cylinders and is easily measured by a chlorine meter manufactured for the purpose. This is a stable, economical and convenient source of chlorine. A solution is prepared containing 15 grams of dry sodium carbonate per liter. (=17.6 grams monohydrate or 40 grams washing soda), a measured quantity, 4.8 grams per liter (or about 1700 cc.) of chlorine gas is allowed to run into the solution. Ten cc. of the solution is then titrated. If the solution is too

strong, it should be diluted to 0.5 per cent. NaOCL with 1.5 per cent. sodium carbonate, which serves to correct the unduly diminished alkalinity caused by the excess of chlorine introduced into the solution. However, the designated amount of carbonate is planned to give, at a concentration of 0.5 per cent. NaOCL, the minimum degree of alkalinity consistent with stability, and if chlorine has been introduced in such excess that the titer exceeds the desired by more than 6 or 8 cc. of N/10 thiosulphate, or if the solution fails to give a momentary flash of color with *alcoholic solution* of phenolphthalein, it should be discarded. The solution must, of course, show no color with powdered phenolphthalein. The solution should be titrated for hypochlorite concentration every 24 or 48 hours.

If a chlorine meter is not available, chlorine may be run into the 1.5 per cent. carbonate solution through any improvised diffuser. The amount of chlorine required to give a hypochlorite concentration of 0.5 per cent. is approximately twice the amount required to cause decolorization of powdered phenolphthalein. It is, therefore, convenient to add powdered phenolphthalein and note the amount of chlorine required to cause the decolorization. When almost twice that amount of chlorine has been introduced, frequent titrations of the hypochlorite content must be commenced.

TITRATION OF BLEACHING POWDER.

Bleaching powders vary considerably in their "available chlorine" content, so that it is desirable to determine the available chlorine in each lot. Exceptional samples may contain as high as 35 per cent. available chlorine. Bleaching powders with less than 20 per cent. available chlorine should be rejected.

The available chlorine content may be determined as follows: Exactly 10 grams of bleaching powder made up of small samples from different parts of the jar, in order to obtain a representative sample, are well shaken with a liter of water. After standing about six hours, the solution is filtered and a 10 cc. sample of the filtrate is titrated in exactly the same manner as in the titration of Dakin's solution. In this case the number of cc. of decinormal thiosulphate required to decolorize, multiplied by the factor 3.55, gives the percentage of active chlorine in the bleaching powder.

Every surgeon should be equipped to make certain simple tests to determine the concentration and the alkalinity of Dakin's.

Concentration.—The percentage of sodium hypochlorite is determined by titrating with tenth normal sodium thiosulphate (Hyposulphite) the amount of iodine liberated by a measured amount of Dakin's solution.

Measure 10 cc. of Dakin's solution, using a bulb pipette, into a beaker of Erlenmeyer Flash containing 50 cc. of tap water. (The addition of a few drops of starch solution facilitates determination of the end point).

Add 5 cc. of a 10 per cent. potassium (or sodium) iodide solution and 3 or 4 cc. of glacial acetic acid. Then run decinormal thiosulphate solution into the flask from a burette until the decolorization of the solution is just complete. The flask with the contents should be vigorously agitated during the titration.

The number of cubic centimeters decinormal thiosulphate required to decolorize the solution, multiplied by the factor 0.0372, gives the percentage of sodium hypochlorite. For example: 13.0 cc. X 0.0372 = .48 per cent.

TESTS FOR ALKALINITY.

Test With Powdered Phenolphthalein.—A few crystals of powdered phenolphthalein are dropped on the surface of about 5 cc. of the solution to be tested and the solution vigorously shaken. Dakin's solution should remain entirely colorless. If there is any red color, the solution is too alkaline and must either be discarded or the excess alkalinity neutralized.

Test With Alcoholic Solution of Phenolphthalein.—About 0.5 cc. of alcoholic solution of phenolphthalein (1%) is squirted from a dropper into about 5 cc. of the solution to be tested, in a test tube. The solution should show a red color which will disappear at once. If there is not at least a momentary flash or red color the solution has so low an alkalinity that its hypochlorite content will rapidly diminish.

Preservation.—Dakin's solution should be kept in amber colored containers or in the dark.

Identity.—To avoid a mistake, it is best to color Dakin's solution with potassium permanganate—1 cc. of a 0.5 solution per liter. It is needless to say that this should not be added until the test for alkalinity is made.

Preparation of N/10 Sodium Thiosulphate.—This solution must be carefully prepared for upon its accuracy depends the accuracy of the titration of sodium hypochlorite. The sodium thiosulphate may be obtained in a pure form from any of the large chemical houses. 24.82 grams made up to one liter in a volumetric flask,

give a tenth normal solution; each cc. of which is equivalent to

.0127	gram Iodine
.003546	gram Chlorine
.00372	gram Sodium Hypochlorite
.0141	gram Chloramine-T
.006	gram Dichloramine-T

THE CHLORAMINES.

1. Chloramine-T. Chemically sodium toluene—sulphonchloramide—is a water soluble, stable (both in powder and solution) organic, odorless crystalline, white powder which contains 12.6 per cent. of chlorine. In striking contrast to Dakin's, solutions of Chloramine-T have little solvent action. A wound, the necrosed tissue of which has been removed by the solvent action of Dakin's, may be treated similarly and with equal success by the instillation of a 2 per cent. chloramine-T solution. This is sometimes an advantage as the latter produces little or no skin irritation and possesses high germicidal action.

A more dilute solution is useful in an irrigation in cystitis, inflamed conditions of the conjunctival sac and nasal passages. In the former conditions, a 1-1000 and the latter 1-200 solution will suffice.⁴

Gauze impregnated with the powder—5 per cent. by weight—has been found useful as a first aid dressing in industrial accidents. Incorporated (1%) in a sodium stearate cream it has been found useful especially in the treatment of burns and surface ulcerations. Since it liberates the chlorine content slowly it maintains effective sterilization over a prolonged period—twenty-four hours. It in no wise interferes with cicatrization. The paste should be removed daily, the wound being cleaned after the manner described for the Dakin solution dressing.

2. Dichloramine-T. Chemically toluene-sulphondichloramine is a yellowish white crystalline powder with a chlorine-like odor. It is not soluble in water, paraffine or petroleum. A product obtained by the chlorination of paraffin or petroleum. A product obtained by the chlorination of paraffin wax to which sodium bicarbonate is added (5% by weight) and known as chlorcosane is the best solvent for dichloramine-T. Since sunlight causes rapid deterioration, it should be kept in an amber colored bottle. It may be used in a 5-8 per cent. solution using chlorcosane as a solvent. It is

⁴. The reader is referred to "Dakin & Dunham Hand Book of Antiseptics."

useful in the treatment of puncture like wounds in ambulant patients. A small quantity .5-3 cc. will suffice for ordinary moderate sized wounds, the dressing being changed daily.

Dichloramine-T dissolved as indicated has a very salutary effect upon wound granulations. We have found it particularly useful in osteomytic wounds (which have been cleaned and sterilized by Dakin's) to maintain sterilization and promote the growth of granulations until closure is complete.

Occupational wounds may be, as Lee of Philadelphia has shown, after the excision of dead tissue and palpably infected foci, bathed in the oil and the wound closed without drainage. This procedure however, is not a safe one unless the wounds are seen early—within 2 hours—and there is reason to believe that there has been but slight chance of virulent contamination. Should a portion of the wound show signs of infection, a stitch or two may be removed and the oil introduced to the foci of infection.

Dichloramine-T in a 2 per cent. solution is useful as a spray to the nasal passages especially in meningococcus carriers. To facilitate spraying, which should be done every two hours, it is usually necessary to reduce the viscosity of the chlorcosane by the addition of a tenth volume carbon tetrachloride.

Testing.—To estimate the concentration of the dichloramine solution: Dilute 10 cc. of dichloramine-T solution to 50 cc. with carbon tetrachloride. Measure 10 cc. of the solution into a flask and add 5 cc. of potassium sodium solution and 2 cc. of acetic acid. Titrate with N/10 thiosulphate. Multiply cc. required to decolorize by 0.3 to give per cent. dichloramine-T.

To estimate the concentration of the chloramine-T solution, proceed exactly as if testing Dakin's, multiplying cc. required to decolorize by 0.141 to give percentage of Chloramine-T.

Neutral Soap.—Tincture of green soap may be neutralized by the addition of dilute hydrochloric acid until it no longer shows presence of free alkali on the addition of alcoholic phenolphthalein. A pure soap, however, will give a red color with alcoholic phenolphthalein owing to the hydrolysis of the sodium salts of the fatty acids. This hydrolysis must be repressed in testing by the addition of an equal quantity of 95 per cent. alcohol.

A soap containing free alkali should not be used in or about wounds.

A CASE OF BILATERAL CAVERNOUS SINUS THROMBOSIS FROM A CARBUNCLE ON THE NAPE OF THE NECK IN LATENT INFLUENZA.

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The cavernous sinus, lying between the meningeal and periosteal layers of the dura mater extends from the central end of the sphenoidal fissure in front, to the apex of the petrous bone behind. Its outer wall is the more distinct, and contains in it, but separated from the blood by the lining membrane of the sinus, the third and fourth nerves and the ophthalmic division of the fifth nerve, the nerves lying in the above mentioned order from above downwards and from within outwards.

The third nerve is situated higher up and, in the neighborhood of the cavernous sinus, further forward. It passes through a canal which is more resistant and which protects it better against external injuries.

Centrally, the internal carotid artery and the sixth nerve also pass through the sinus, being separated, likewise, from the blood by the endothelial lining. The inner wall is practically absent, the blood space communicating across the middle line with the opposite sinus in front, behind and below the pituitary body. This venous plexus, encircling the hypophysis, is the so-called circular sinus, or Ridley's sinus.

The cavernous sinus is transversed by numerous trabeculae, or fibrous bands, so that there is no central space but rather a number of endothelial lined, irregular, lacunar cavities communicating with each other—hence its name "cavernous," from its resemblance to cavernous tissue. Anteriorly, it receives the ophthalmic vein, with which it is practically continuous, and just above the third nerve the sinus *alae parvae* (which latter generally receives the fronto-sphenoidal veins of the diploe). Posteriorly the cavernous sinus ends in the superior and inferior petrosal sinuses. Through the Vesalian veins, the sinus communicates with the pterygoid plexus; through the venus plexus around the intraosseous portion of the internal carotid, with the internal jugular vein; and through small veins, which leave the cranium through the foramen ovale and foramen lacerum medium it communicates with the pterygoid and pharyngeal plexuses.

Frazier says:

"Of the most importance is the so-called vein of Trolard, which, arising in the pterygoid plexus of veins, passes through the foramen ovale and empties into the inferior petrosal sinus, with the third division of the fifth nerve. These means of communication explain the relation of cause and effect between inflammatory lesions in the distribution of the pterygoid plexus of veins (the aveoli of the inferior maxillary bone, the tonsils, and pharynx) and thrombosis of the cavernous sinus. By the way of the temporosphenoidal sinus the infectious agents from the skull may be carried to the cavernous sinus. Thus, also, inflammatory lesions in the distributions of the facial vein, by a retrograde process through the anastomotic terminal capillaries of the facial and ophthalmic veins, may give rise to sinus thrombosis."

The lateral sinus receives the veins from the occipital vein and the external parietal veins of the diploe, the superior petrosal sinus, the petro-squamoid sinus, besides some of the veins from the cerebrum, cerebellum, medulla, and pons. It communicates with the occipital and vertebral veins through the mastoid and posterior condyloid foramina by means of the emissary veins.

The veins of the nape of the neck communicate freely with the spinal venous plexuses which through the occipital foramen join the jugular at the level of the sinus, or else the veins of the nape of the neck can communicate directly with the lateral sinuses through the occipital veins or the mastoid foramen which is at the level of the elbow of the sinus.

The inferior petrosal sinus connects the cavernous sinus with the commencement of the internal jugular vein. As it crosses the anterior compartment of the jugular foramen, it separates the glossopharyngeal nerve from the pneumogastric and spinal accessory nerves.

The transverse or basilar sinus is a venous plexus extending from the cavernous sinus to the margin of the foramen magnum. It communicates laterally with the inferior petrosal sinus, and inferiorly with the anterior spinal veins. Thru this sinus passes the sixth nerve. One of the larger channels forming the sinus passes transversely from one inferior petrosal sinus to the other. It is this portion to which the description of the transverse sinus given by some authors appears to apply.

A part of the lateral sinus running between the two layers of the tentorium cerebelli following the curve of the groove on the occipital and posterior angle of the parietal bone, is sometimes known as the transverse sinus. It later

ends, over the jugular process of the occipital bone in the sinus jugularis, or bulb of the internal jugular vein. The S shaped process of the lateral sinus lying on the mastoid portion of the temporal and the jugular portion of the occipital bone is known as the sigmoid sinus.

This study is based upon one case from our Clinic; one case reported by Bellin, Aloin and Vernet (18) in October, 1918; one case reported by Jack (1); the paper of Dwight and Germain (2) who reported four cases and studied the records of 178 previously reported; and twenty-eight others, reported in various journals, but not included in the above mentioned compilations.

Jackson (4) found in the twenty-eight cases that he collected that one was caused by ocular inflammation; one by injury to the orbit; four seemed to arise directly from general conditions (three from scarlet fever and one from marantic thrombosis); three from abscess of the forehead, cheek and lips; one from lachrymal abscess; one each in disease about the teeth and tonsils; and thirteen from the middle ear and mastoid.

He further states that Thompson thinks the most common cause is disease of the sphenoidal sinus.

Dwight and Germain record that fourteen of their 182 cases recovered.

Jackson in his series of twenty-eight cites four cases as surviving with total or partial loss of vision:

"In Seggel's case there was but little abnormal in the ophthalmoscopic findings, but the patient recovered with great limitation of the field pointing toward disease of the chiasm or optic tract. In the chronic non-fatal case reported by Zentmayer and Weisenberg, vision was materially reduced and there was some atrophy of the optic nerve, probably postneuritic. In Stocker's case where the patient survived four years, central vision was lost. At an early stage there was severe edema of the retina and disc, and later some atrophy and broad white stripes, with indistinct margins, in the retina. Day's patient recovered with the eye damaged by corneal ulceration. Werner's case recovered, and 'when last seen the eye was perfect.'"

Dr. Albert E. Halstead, a few years ago, discussed before the Chicago Ophthalmological Society two cases of cavernous sinus thrombosis which recovered. The origin of one was the sphenoidal sinus; the other was following an operation for traumatic pulsating exophthalmus, five weeks later.

The earliest and latest recorded cases of cavernous sinus thrombosis are similar in two respects—duration and extent. The earliest case is one of otitic origin, and is so devoid of classic symptoms that, had there been no autopsy, the diagnosis would never have been established. It was reported by Andrew Duncan, Jr., in the Edinburgh Medical and Surgical Journal, 1821. The disease ran a course of about six weeks, terminating fatally. For four weeks this patient suffered shooting pain in the left side of the head from 12 P. M. until daybreak. Later the pain was constant and dull. For a few days there was such intolerable pain over his eyes that he could not sleep. There is no record of chills or fever, or of symptoms of paresis from impingement on nerve fibers or circulatory interference. There was no clinical diagnosis made of the pathology of the cavernous sinuses which was revealed at autopsy. At the post mortem it was found that the purulent dissection had extended between the layers of the cervical muscles and far down the back beneath the trapezius muscle.

The latest recorded case is one from a carbuncle on the nape of the neck, reported by Bellin, Aloin and Vernet.

The patient was a soldier who had been debilitated by a long sojourn in the trenches, by the cold and poor hygienic conditions. He had been cared for for twenty days in provisional quarters for an affection of a general order, not defined; then tetany appeared and its convulsive crises led to a diagnosis of tetanus, at the time he entered the hospital.

He was semi-comatose. His temperature was 102.2. He complained of headache and great thirst. There was internal strabismus on the left with facial paralysis and partial paralysis of the third and fifth nerves. There was slight ptosis and an almost imperceptible puffiness of the left eyelid. A circumscribed edema about the left sterno-mastoid muscle was found, with contracture of the muscle, and the head tilted to the left. When shaved for the operation, a *caput medusa* was found on the left. The diagnosis of a lesion, probably a thrombo-phlebitis, localized near the styloid process, in the neighborhood of the cavernous sinus, was made and confirmed by operation on the lateral sinus of the left side. No pus was found at this time but a well formed thrombosis was present extending both ways in the lateral sinus. The condition of shock prevented complete

evacuation of the clot and the patient died a few hours after the operation from septicemia.

In autopsy the sterno-mastoid wound was opened. The jugular vein was thrombosed to the thyro-lingual-facial trunk where it had been ligated. From the prestyloid space the pus flowed out through all the muscular interstices. The pterygoid muscles seemed full of small abscesses. Pus covered the lateral wall of the pharynx and was found as far as the vertebral bodies and had dissected the muscles of the neck on the left side, creating channels which communicated with the cavity of the carbuncle. The parotid gland was filled with honeycombed abscesses which compressed the facial nerve. There was a clot in the torcular Herophili and the entire length of the longitudinal sinus was filled with a thrombosis. The superior and inferior petrosal were filled with a purulent matter and the cavernous sinus was an actual sponge of pus. The external motor oculi, patheticus and trigeminal nerves were bathed in pus. The facial and auditory nerves farther down seemed unaffected. The ophthalmic veins were thrombosed on both sides and pus flowed out from all the tissues of the orbit. The right basal meninges were unaffected but on the left purulent tracts were scattered about. There were two small abscesses in the cerebrum which probably gave rise to the tentaniform contractions noted on the patient's entrance to the hospital.

The cases of infectious cavernous sinus thrombosis as noted are rare and relatively few have been reported. The case reported in this paper differs from the majority of those recorded, in a few particulars:

1. The infection originated from a carbuncle on the nape of the neck.
2. There was no initial chill or subsequent chills although the infection was due to the streptococcus and produced a temperature above 103 degrees for several days, eventually reaching 107 degrees by axilla.
3. The pupils remained normal in size and responsive to light up to the time of the last observation on the evening before death, although the involvement of the third nerve which led to ptosis and ophthalmoplegia externa would also have been expected to lead to paralysis of the sphincter irides, and dilatation of the pupil.
4. There was early immobility of both eyes without a preceding squint, due to the simul-

taneous involvement of all the external ocular nerves in the thrombosed cavernous sinuses.

CASE REPORT.

On December 19, 1918, R. McD. first came under our observation. The clinical history was as follows:

Mr. R. McD., twenty years of age, was a student at Lansing in the Student's Army Training Corps. He had had no illness except the Spanish Influenza during the latter part of October, 1918. His convalescence was prolonged and he was easily fatigued when his last illness began with the appearance of a boil on the back of his neck early in December. Later, about December 12th, what he considered another "boil" started and was accompanied by great stiffness in the neck and shoulders, and much pain.

On Friday, December 13th, he could eat nothing because he felt so ill. He presented himself at the S. A. T. C. Infirmary, complaining of the pain and stiffness in the back of the neck and the loss of appetite. The orderly of whom he asked entrance told him that he had only a pimple on the back of the neck, which required no medical attention and he was not seen by the medical officer.

On December 15th and 16th, two of his friends told him that if he could not eat he must go to the Infirmary, and each, in turn, went with him. On the 16th, at the third visit, he was seen by the medical officer, who told him that he had a boil on the back of his neck, that he would be going home soon and would be all right. He ordered an antiphlogistic dressing. On Tuesday afternoon, December 17th, he received his discharge from the S. A. T. C., and returned to the temporary home of his mother in Battle Creek. On his arrival that night he could not identify his own baggage nor remember who took him to the train. He had not eaten any food for four days. His neck and shoulders were stiff, and the entire integument of the back of the neck, from ear to ear, and extending almost to the vertex, was indurated and of a bluish red color. The mother said that his temperature on arrival home was high, but she did not know how high. He began vomiting December 18th. His mother gave him enemas and a bath and kept him in bed. He slept none that night. On December 19th, a surgeon was called who incised the back of the neck and introduced drainage. Very little pus was evacuated. The patient complained of pain in his eyes for the first time, and an aching "thud" in the eyes, beginning when pressure was made on the neck at the time of the incision. About three hours later as I was passing their apartment in the evening, the mother, with whom I had been acquainted as a neighbor, asked me to step in to see her son, saying that his eyes looked so "queer." She stated that she had called for their family physician who had not yet been reached. At first glance at the slightly protruberant eyeballs and chemosis of both conjunctivae, I looked for the initial lesion and found it in the freshly opened carbuncle on the back of the neck. At this time the chemosis on the right eye was greater than on the left; the carbuncle was slight-

ly at the right of the median line on the back of the neck, and the right mastoid was "doughy" and red. At this time the patient complained only of nausea and headache and pain in the eyes—an aching thud. There was no ptosis of the lids. He could move his eyeballs in all directions. His eyeballs seemed simply big from beginning conjunctival chemosis and slight swelling of the lids. That evening on the advice of Dr. W. F. Martin, the family physician, the patient was removed to the hospital. Dr. Martin called us the next morning asking that the patient have an early examination of his eyes as something had developed in the night that had made him blind. About 9 A. M., Friday, December 20th, examination revealed the following symptoms:

1. Patient's temperature was 103.2 degrees; pulse 92; respiration 28; bowels constipated. He lay on his back with his head slightly inclined to the right.
2. He answered questions audibly but weakly, then would lapse into delirious whisperings.
3. There was bilateral exophthalmos, the left as great as the right, with exquisite tenderness over the eyeballs.
4. There was ptosis of the greatly swollen eyelids, with
5. Extreme chemosis of the conjunctivae, both projecting onto the cheeks through the closed lids.
6. The anterior portion of the globe seemed normal aside from the chemosis of the conjunctivae.
7. The eyelashes and conjunctivae had been glued together during the night with bloody serum, making the vision seem poor when the lids were first lifted.
8. There was anesthesia of the cornea, as evidenced by his bearing without flinching, the wiping away of the serum to examine the fundi.
9. The pupils were equal and normal in size and actively responsive to light. The convergence reflex could not be obtained as
10. There was ophthalmoplegia externa.
11. Central color vision was accurate. The fields were only grossly measured but seemed quite normal in size. The form also was good.
12. There was binocular single vision. Patient said that he had not seen double at any time.
14. Fundi: With pupils dilated with homatropine and cocaine, the media were found clear beyond the conjunctivae. The borders of the papillae were comparatively clear cut. There was very slight blurring of the upper and inner borders. The arteries were small and the veins tortuous. No retinal lesions were seen. The macular, foveal and juvenile reflexes were brilliant. It was impossible to get a perfect view of the periphery because of the complete ptosis of the greatly swollen eyelids which had to be held up, the fixed eyeballs, the dripping conjunctivae and the pain which the manipulations caused. The pupils were contracted with eserine after the examination.

Dr. W. H. Riley, who was also called in consultation, examined the heart and reflexes at this time. He found pericarditis and myocarditis but no signs or symptoms of meningitis.

The evening of this same day while in conversation with Dr. E. P. Wilbur of Kalamazoo, who was called in consultation, I stated that in my opinion this was a case of sinus thrombosis with paresis of all the nerves of the cavernous sinus instead of an orbital cellulitis, for the condition was bilateral and there was no pointing of the tissues on either side, which almost precluded orbital cellulitis. Dr. Wilbur concurred and advised antistreptococcal serum. When he saw the patient thirty-six hours before death, the pupils responded to light and the intraocular tension was normal. The patient had not seemed conscious for four hours before this. Dr. M. A. Farnsworth in consultation reported negative findings in the ears and nose. Dr. W. O. Upson reported the X-ray findings as follows:

"The bones of the cranium are normal and there is no X-ray evidence of increased intracranial pressure. The sella turcica is normal.

The maxillary, frontal and sphenoidal sinuses are negative and there is no X-ray evidence of an inflammatory process. There is a slight amount of cloudiness in the right ethmoidal sinus that would suggest thickened membrane. The left ethmoidal sinus is normal."

On Saturday, the 9th day of his sickness he began expectorating bloody mucus. His temperature was 103 degrees by axilla, pulse 100, respiration 28. He seemed unconscious all the time, but moaned a great deal. There was involuntary micturition. The pupils were still active to light. Homatropine and cocaine were again instilled and the fundi examined twice again, the last time being at 8 P. M., ten hours before his death. At this last examination the conjunctivae were more wrinkled and thickened. The bloody serum teared over his cheeks. The nerve heads had become edematous at the upper, nasal and lower border, but a segment on the temporal border remained clear cut. The retinae were pale, and above the nerve on the right there was a billowy whiteness resembling the infiltration seen in commotio retinae. The arteries were small, veins full and tortuous. No hemorrhages were seen. The frontal veins were thrombosed and made a purplish streak down the middle of the forehead, that grew darker. The patient understood that he was being talked to, for he essayed to answer questions. He whispered the answers so faintly that they could not always be understood. During the day he was restless, kept moving his arms and legs about, and slept in short naps, snoring when he slept. He breathed through his mouth for his nose was swollen. He drank malted milk and fruit juices during the early part of the evening, and at 9:15 P. M., he asked for water. At this time his temperature was 104.8 degrees, pulse 145 and respiration 42. His arms and legs were stiff.

At midnight the patient mumbled and sang but could not swallow.

A little later he groaned with every breath. The eyes became more protruberant and of a purplish color, the pulse was very rapid and weak. It could not be counted. At four o'clock the axillary temperature was 106 degrees; at 6:30 it was 107. He died at this time with froth oozing from his mouth.

Post Mortem.—Permission was granted for a postmortem examination of the chest and abdomen. This was done by Dr. C. E. Roderick at the request of Dr. W. F. Martin.

Dr. A. S. Warthin, who studied microscopic sections of the heart, lung, and liver reported:

"In the liver a streptococcus pyaemia and septicemia. In the heart and lungs multiple abscesses containing great numbers of streptococcus colonies. There are large areas of metastatic pneumonia in the lungs with streptococcus colonies everywhere, and the liver shows cloudy swelling with streptococcus in the blood. In addition, on the mitral valve there is a very early endocarditis, also streptococcal in origin. This patient therefore had a most intense streptococcal infection. Pyaemic abscesses of the heart are not very common and when they do occur, it is usually an expression of intense bacteraemia."

The pathogenesis of the sinus thrombosis was quite unlikely to have been by contiguity, but must have been the formation of a thrombus of a vein at the site of the carbuncle.

The veins of the nape of the neck communicate freely with the spinal venous plexus, which, through the occipital foramen join the jugular at the level of the sinus; these veins, also communicate directly with the lateral sinus through the occipital veins, or through the mastoid foramen, which is at the level of the elbow of the lateral sinus. From the sigmoid the direct route to the cavernous sinus is through the superior petrosal.

It may be that the thrombosis reached first the jugular sinus to travel in two opposite directions; on one side towards the cavernous sinus through the inferior petrosal sinus; and on the other side, through the jugular vein. Of these tracts it would be impossible to state precisely which one was followed by the infection. After reaching the cavernous sinus it progressed through the ophthalmic veins to the angular and its tributaries, and through the Vesalian vein to the pterygoid plexus and its tributaries.

There must have been numberless small necrotic thrombi entering the circulation which being washed through the lungs and scattered to the different organs as emboli there set up metastases. Thus through both venous and arterial systems this virulent, infiltrating streptococcal infection inundated the whole circulatory system presenting the local symptoms narrated and the general ones of headache, nausea, vomiting, constipation and a fever which took on the classic march absolutely significant of all septicemias.

ETIOLOGY OF INFECTIOUS CAVERNOUS SINUS THROMBOSIS.

1. It is more common in young adults; while rare in the extremes of life.
2. It is oftener found in brachiocephalities. (Korner).
3. The structure of the sinuses is said to favor venous stasis. (Marfan).

4. The triangular shape of the canals increases the functional resistance, the walls constructed of fibrous tissues are rigid, and the dense bands of fibrous tissue which pass from one wall to the other prevent the collapse of the sinus and themselves offer resistance to the blood currents.

5. Sinus phlebitis occurs more frequently on the right side than on the left. The right sigmoid is generally broader and deeper; it also extends further out and forward than that of the opposite side. (Von Bergman).

6. Horizontal decubitus predisposes to venous stasis.

7. Some of the veins opening into the lateral sinus pour in their blood in a direction opposite to the current in the sinuses, so impeding the flow in both veins and sinus.

8. It may follow injury to the head, such as fractures of the skull; blows upon the head; punctured wounds through the orbit.

9. It may be caused by a direct injury to the sinus. The cavernous sinus is the only one which can be directly injured without involving the skull. This is rare. There are four such cases collected by Dwight and Germaine.

10. It is usually the result of a septic process.

This septic process may be brought about by contiguity, though rarely, as in meningitis, diseases of the bone, abscess in the post orbital space.

Or it may occur by extension of the process through the tributary veins. The common origin of primary thrombosis of the cavernous sinus is usually through the ophthalmic vein, whose branches, the frontal, supra-orbital and angular, drain the face and scalp; or from the mouth, nose and pharynx, through the pterygoid plexus. Or, again, the thrombosis may follow the sheathes of the nerves causing meningitis.

The cavernous sinus may become thrombosed from other sinuses.

The thrombosis may follow influenza with its resultant empyema of the sphenoidal and ethmoidal cells and caries of the bones. (Laveran, after the epidemic of 1889-90 said: "Phlebitis has been a very frequent complication of grippe.")

It may have as its source a frontal sinusitis. A case is reported of five weeks' duration. Six days before death an intense pain was localized above the right orbit. Patient felt something

"snap" within the right orbit and the pain diminished, but immediately the right eyelid began to swell.

The septic process may start in the nasal cavities from furunculosis, trauma, tuberculosis, syphilis, and polypi. Verhoeff of Boston reported a case starting from a small furuncle in the nose. The infection extended up on the outside of the nose along the subcutaneous tissue into the orbit. The patient died in three or four days.

It has been known to start in the buccal cavities from such causes as ulceration of the tonsils or pharynx, including phlebitis of the veins of the pterygoid plexus.

Cases have been reported where cavernous sinus thrombosis was the results of an infection in the skin, in one instance caused by a pimple in the skin of the temple, which the patient had pinched with the fingers a few days before; in another caused by a carbuncle on the neck.

One was a case due to erysipelas of the face, caused by a bite on the eyelid by a friend. It occasioned phlebitis of the anterior facial and ophthalmic veins.

Thrombosis may occur from osteitis and periosteitis. The case is reported of a little boy with persistent suppurative periosteitis of the jaw. He had a lower molar extracted. Immediately afterward the lids began to swell, the globes protruded, rigors occurred, and the temperature rose to 104 degrees, the pulse failed, consciousness was lost and death ensued.

Infectious inflammation in either maxilla may set up phlebitis in the coronary, facial and other veins. Dento-alveolo-periosteitis or any condition causing an abscess of the pterygo-maxillary fossa may give rise to cavernous sinus thrombosis.

SYMPTOMATOLOGY.

1. Occlusion of the lateral sinus blocking the inlet of the mastoid vein gives rise to painful circumscribed edema over the mastoid.

2. Pain upon percussion of the mastoid is present when the bone or periosteum are inflamed.

3. If the lower part of the lateral sinus is thrombosed so that the condylar veins are shut off (through which the superficial circulation of the lateral lower occipital region drains) a brawny hardness and edema may be made out in the upper part of the posterior cervical triangle. Zaufal discovered the sign of a unilateral dilatation of the mastoid vein to the size of the jugular on the same side.

4. With internal jugular involvement there is extreme local tenderness over the upper portion of this vessel on palpation, or extreme tenderness may be experienced in swallowing.

5. When thrombosis follows down into the jugular, this vein may be easily palpated as a firm, cord-like structure. Disintegration of the thrombosis may cause it to disappear in a few days.

6. Gerhardt has pointed out that during inspiration the external jugular vein on the affected side is less prominent. This is due to the occlusion of the internal jugular, which allows rapid drainage of the external branch into the common trunk.

7. If the thrombosis extends into the common trunk, the external vessel is then engorged, and more prominent than on the sound side.

8. The lymphatic glands of the neck are frequently engorged and easily palpable.

9. The head is usually inclined to the affected side to lessen muscular pressure on the jugular.

10. If the inflammatory thickening at the jugular foramen is sufficiently great, it involves, by extension or pressure, the cranial nerve trunks which make their exit at this opening. Pneumogastric, spinal accessory and glossopharyngeal symptoms are produced. Respiratory, laryngeal, cardiac and vocal disturbances; difficulty in swallowing and spasm or paresis in the sternomastoid and trapezius point to this condition.

11. Almost from the first there are distinct cerebral symptoms. The cephalgia is attended by somnolence which may deepen into coma. Delirium is often an early symptom.

12. The general manifestations are those of pyaemia. The local manifestations are the result of disturbed circulation. The presence of a swollen sinus, or an extra-sinus exudate will account for many of the symptoms of thrombosis. Within the skull there is disturbance of the brain function; outside the skull, edema, local edema of the eyelids and retrobulbar edema with exophthalmus caused by stasis in the ophthalmic vein. Neuralgia of the first division of the trigeminal and paralysis of the abducens, trochlear and oculomotor nerve. Disease of the oculomotor nerve is also manifested by ptosis. The pupil is usually contracted at the beginning of the disease. If pressure on the nerve is increased, the pupil becomes dilated and fixed corresponding with oculomotor paralysis, strabismus or some other abnormal position of

the eyes and total ophthalmoplegia with amaurosis later as a result of pressure on the optic nerve.

Von Bergman asks:

"Are these manifestations of stasis in the eye and paralysis of all the muscles of the eye characteristic of thrombosis of the cavernous sinus? Hessler finds that most of the symptoms may be present in pure, uncomplicated, thrombo-phlebitis of the transverse sinus, but that they are found more frequently and combined with each other in progressive sinus phlebitis. The only additional symptom in thrombo-phlebitis of the cavernous sinus besides those of the transverse is swelling of the eyelids produced by direct stasis of the ophthalmic veins." (Bull).

13. Headache is diffused or limited.
14. Dizziness, nausea and vomiting.
15. Rapidly increasing body temperature which shows marked remissions. In a few hours the temperature rises to 104 and 106 degrees, and almost immediately this is followed by a fall, somewhat to subnormal, usually with profuse perspiration. In rare cases the fever is continuous and not remittent. Repeated chills are an important sign because a characteristic sign of pyaemia. Either the first chill occurs at the same time as the first symptom of cerebral irritation or is one, two, or more days later. The pulse is subject to the same variation as the temperature (100-140).
16. Metastatic abscess formation causes slighter remissions of pulse and temperature.
17. The tongue is coated and dry.
18. There is a tendency to diarrhea in chronic cases. In other cases constipation.
19. Jaundice occurs in pure sinus phlebitis three times as frequently as in the complicated form. The liver and spleen are enlarged. At times there is an exanthem with diarrhea and pea-soup stools.
20. Convulsions rarely occur in pure sinus phlebitis. In the complicated form they occur three times as frequently and most frequently when complicated by cerebral abscess.
21. The activity of the brain is unimpaired in uncomplicated, infectious thrombosis.
22. Irritating cough and sudden painful sensation in the chest announce the obstruction of small pulmonary vessels.
23. Pneumothorax may be the result. Hessler has shown by statistics that in 130 cases of sinus phlebitis with metastases, the lungs were found unaffected only 14 times.
24. Metastases have been observed in the joints, synovial sacs, muscles, kidneys, spleen,

liver, eye and in one case in the aryepiglottic fold caused by small emboli which passed wide pulmonary capillaries and were deposited as emboli.

25. Hoarseness, dyspnea, slowing of the pulse, and even death through respiratory paralysis are manifestations of compression and inflammation of the vagus nerve.

26. Spasms in the sternocleidomastoid and trapezius muscle are produced by irritation of the spinal accessory.

27. Dysphagia occurs in disease of the glossopharyngeal and hypoglossal nerves. The latter emerge through the anterior condyloid foramen.

28. Choked disc occurs according to Hansen in 30 to 50 per cent. of all cases of pure phlebitis of the transverse sinus. Therefore it is difficult to differentiate thrombophlebitis of the transverse sinus from thrombophlebitis of the cavernous sinus.

The classic symptoms of primary cavernous sinus thrombosis are.

1. Exophthalmos, appearing suddenly, and progressively increasing, usually bilateral. Of the 134 cases coming to autopsy of Dwight and Germain, only thirty-one showed a thrombosis limited to one side. In sixty-five, both sides were affected, and in twenty-eight, other sinuses were also involved.

2. Swelling in the orbit.

3. Swelling of the lids which may extend to the whole face.

4. Chemosis and inflammation of the conjunctiva with corneal involvement from exposure, often with ulceration.

5. Usually optic neuritis.

6. Tortuosity of retinal veins.

7. Paresis of both external and internal muscles of the eyeball.

Quoting from Bull, "Hessler find that most of the symptoms may be present in pure, uncomplicated thrombophlebitis of the transverse sinus but that they are found more frequently and combined with each other in progressive sinus-phlebitis. The only additional symptom in thrombophlebitis of the cavernous sinus besides those of the transverse sinus is swelling of the eyelids produced by direct stasis of the ophthalmic veins."

In the above syndrome the second, third, fourth, ophthalmic division of the fifth, and the sixth nerves are involved.

In a few of the cases reviewed the seventh nerve has been involved in the disease.

In several cases, especially when the trouble started in the ear, the 8th nerve, and in many the 9th, 10th, 11th and 12th were affected shortly before death.

The case here reported presented all of these classic symptoms with the following modifications:

1. There was not internal ophthalmoplegia.
2. There was only moderate involvement of the cornea.
3. There was only beginning optic nerve involvement, due to the brevity of the duration of the case.

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TREATMENT OF SEPTIC AND INJURED JOINTS.*

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Perhaps the two greatest changes in surgical practice, brought about through war experience, are the modifications and alterations in the methods of treatment of fractures and of injured or infected joints. In other departments of surgery improvements have been made along the lines of simplicity, accuracy, and speed; but in these two departments the changes have been radical and basic. The most advanced thought and methods of a few men who treated these types of surgical cases really well before the war, have been codified, expanded and tried on huge numbers of patients, and then, a thing of far more importance, taught to a large number of average surgeons. The great mass of material has stimulated thought and experiment in a way never

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known before. Surgeons have had an opportunity to invent and then to test their inventions. The result has been that numbers of radically new procedures have been grafted on the best of the old procedures, and we have emerged from the war with a whole series of rational, logical, consecutive methods for the treatment of injured bones and joints.

Many of these methods still require to be perfected in detail, and some of them are still in their experimental stage, but taken all together they represent a tremendous advance in our knowledge and armamentarium. The best of the old ideas have been vindicated anew, in some cases to a startling degree. For example, the efficiency of the Thomas splint for extension and fixation of fractures was known forty years ago, as was the value of motion and function in damaged joints. Both before the war were commonly ignored. Both, however, have been so dramatically re-demonstrated during the war that they have sometimes seemed wholly new. Indeed they have been new to the younger generation of surgeons. Really new principles, such as those involved in "debridement" and primary and secondary closure of septic fractures and joints have given us added resources.

The principles evolved during the war for treatment of fractures and joints are of particular value now in a manufacturing community because of their application to industrial surgery.

We shall be remiss in our duty to our patients, if we forget our war lessons and revert to pre-war standards and apparatus in the treatment of industrial injuries. We must remember that a fracture or an infected joint is the same and calls for the same high grade of treatment, whether it is caused by a high explosive shell, or by a whirling belt. In the latter case we can only be thankful that the sepsis of peaceful pursuits is ordinarily a mild and gentle thing compared to that of the battle field.

We must avoid the point of view of a group of American surgeons who came under my notice in England. They had a ward of thirty-six patients, thirty-five of whom had battle compound fractures of the femur. All these were perfectly dressed, and splinted practically without shortening on the best principles of war technique. The thirty-sixth was a small boy with a simple fracture of the femur. He had marked bowing and two and one half inches of

shortening, and was dressed in a badly fitting, badly applied long DeSault splint with an insufficient extension. When asked for an explanation of this curious anomaly, the surgeons replied in an off-hand manner, "Oh, he is a civilian fracture and we dressed him as we always have dressed civilian fractures of the femur at home." Evidently to these individual minds it was preordained by fate that the unlucky person who broke his femur in civilian life should go on his way forever after with a short leg and nobody should interfere to prevent the workings of Providence.

Such a point of view has been encouraged by much of our medical school teaching, which condones as satisfactory anything up to an inch of shortening after a fractured femur. Such a point of view explains many of our most harassing suits for mal-practice. It is a wrong point of view, I assure you, as the results of the war have proved. Thousands of compound comminuted septic fractures of the femur have come through their injuries under the treatment of British, French and American surgeons, without shortening or other disability, except that left by actual destruction of muscle tissue. Henceforth, if we are honest, we shall have to apologize to ourselves and our patients not for patently bad results in fractures, but for anything short of perfection of alignment and length, when the injury has not actually removed large masses of bone or completely devitalized them.

The same remarks apply in a less degree to injured and infected joints. We have always been taught to believe that a joint fracture or a joint infection necessarily leads, except in rare cases, to a stiff joint, or to a joint at least much limited in function. The war has taught us the opposite. We have learned that a large proportion of injured and infected joints can be restored to conditions closely approximating normal function. This statement leads me to the main subject of my paper, the treatment of joint injuries and infections.

It has always been felt that there was some factor inherent in joint structure that made it particularly non-resistant to infection. How often we have heard it said that the peritoneum will take care of much infection or trauma, but that the synovia of the knee joint will not, and yet the two structures are much alike histologically. Why is this statement made? For two reasons. The blood supply to the synovia is less because there are less blood vessels in its

neighborhood. Its walls are more rigid, and therefore effusion more quickly causes pressure and further lessens blood supply, therefore, the nutrition of an injured joint is necessarily poor. It follows then that under ordinary circumstances, traumata and infection are less well cared for in joints, for blood supply is everywhere the prime requisite to prompt healing.

If we are to get good results in our damaged joints, then we must always remember their nutrition and improve the blood supply in every way. This is the cardinal principle in the treatment of joint disturbances. It applies equally to every type of joint, whether it be the stiff joint which follows the splinting of fractures or the virulent septic joint which unhappily follows, occasionally, the removal of the torn semi-lunar cartilage.

Secondary to this main cardinal principle of maintenance of blood supply are other important principles which depend on the type of joint with which we have to deal.

First, in simple fractures involving a joint surface, perfect reduction of the fragment is of prime importance, because any displacement of the boney structure in the narrow confines of the joint space must mechanically interfere with function regardless of the damage to the synovia. Inability to replace fragments in a fracture involving a joint by manipulation is to my mind practically the only indication for surgical interference in a fresh simple fracture.

Second, in compound joint injuries open operation carried out under the most perfect aseptic technic for the removal of devitalized and infected tissue is absolutely necessary. Such operation is difficult, but must be carried out so carefully and gently as to preclude further trauma, and yet so thoroughly as to include every crevice of the wound.

Third, in joints where active sepsis is already established, immediate and thorough drainage must be obtained at the earliest possible moment. This drainage must be skillfully made with an eye to future function in order that further damage to important structures may not occur. Establishment of proper drainage in any joint requires a most thorough knowledge of joint anatomy.

Fourth, in any type of joint trauma or infection, early resumption of function is of greatest importance. By the resumption of function is meant, not occasional passive manipulation, but frequent voluntary active attempts at motion by the patient himself. Passive motion by the

masseuse or surgeon is at best sporadic. It is dangerous because of the temptation to "go just a little further" and thereby produce further trauma. Active motion by the patient interests him because he is made to realize it is for his own good, and he therefore makes it more or less continuous. It is safe because pain automatically controls it before it does harm.

Fifth, in all types of joints, massage of the neighboring parts, and application of heat to the joints themselves is of value. Massage to the joint itself in any type of acute disease is of doubtful value.

Sixth, in any type of joint avoid prolonged fixation.

In the last analysis, all six of these subsidiary principles of joint treatment go back to the basic principle of maintenance and encouragement of nutrition to joint parts through improvement of circulation. Replacement of a fragment reduces abnormal pressure. Removal of devitalized and possibly infected material tends to reduce effusion, and keeps down pressure. Drainage reduces pressure and encourages resorption. Active voluntary function brings blood to the neighboring parts and by producing motion in the joint increase its circulation.

In considering the application of these principles to the treatment of joints, let us take up a few of the well-known types.

First and best known of all, the stiff joint following the simple fractures of long bones, stiff fingers, wrist, elbow or shoulder in fracture of the forearm. Stiff knee after fracture of the femur, or stiff elbow after low fracture of the humerus. In this class we shall not include fractures which actually involve the joint.

In all of this type of case, our first duty is of course to secure good alignment and union of the fragments. In practically all, this can be done by simple efficient traction applied in the line which the fragments themselves tend to assume. By this is meant that no amount of traction in the mesial plane will reduce the high fracture of the femur, nor with extension of the knee will it reduce the fracture of the lower third of the femur. In abduction and flexion, however, very little traction will reduce the first and with flexion of the knee it will suffice in the second. Traction on a fracture of the humerus with the arm at the side will often prevent union because gravity will actually pull the fragments apart, whereas with the arm at

right angles to the body the amount of traction can be accurately controlled. Intelligent use of traction along these lines will almost without exception secure good reduction and union, and do away with that bane of surgery, the bone plate, and all other forms of open operation on simple fractures.

With the fracture once reduced and held in good position, the problem of the surrounding joints immediately present itself. We must prevent the stiff joints which so often haunt us for months after the fracture is healed. The solution of this problem, lies in the application of the great principle, the improvement of circulation. How can this be done? First and foremost by the avoidance of prolonged fixation in any one position. The forearm fracture must not be held rigidly at the side for weeks if we are to avoid painful stiff shoulders. The apparatus must be so arranged that from the first the patient may daily put his shoulder through the whole range of motion. In the same way the splints must bear such a relation to his fingers that he can move them. The joints which are contiguous to the fracture, the elbow and wrist, must of necessity be kept at rest until some fixation of the fractured fragments has occurred, but at the first possible moment, the splints should be shifted frequently so that motion of the elbow and wrist are allowed.

In fractures of the femur, motion of the knee should be begun as soon as the first signs of union appear. This can easily be done by the use of a little ingenuity, in connection with the slings and extension of the Thomas splint. Massage of the joints in the neighborhood of the fracture undoubtedly assists in the prevention of stiffness and should be begun very early. In occasional cases, motion of the joints will be found to be impracticable without motion in the fragments. If this is the fact, the joints must be ignored, because motion of fragments is the greatest enemy of union. If the principle of motion of joints from the earliest possible moment is always kept in mind, the percentage of stiffness after simple fractures will decrease enormously.

In fractures involving joints, such as the "T" fractures of the radius or tibia, immediate complete reduction of the fragments under the eye of the X-ray is absolutely essential. If manipulation under a general anesthetic is insufficient, then aseptic operative replacement must be resorted to. Under such circumstances,

it is only in the worst cases that any foreign body should be introduced to hold the fragments. If properly replaced they will almost invariably hold themselves if the joint is held in a favorable position. When once replaced, the damaged joint should be held at rest a minimum of time. Usually ten days will suffice to get rid of swelling and allow sufficient organization so that gentle active motion of the joint may safely be begun, and carried out systematically, so that full motion and solid union are obtained together.

Compound injuries of joints present the problem of sepsis. The small wounds should be excised, cleaned out thoroughly and closed. Larger wounds should be cleaned out or "debrided" radically, and closed primarily if possible. Both should then be watched for the first signs of sepsis. If this appears, they should be opened widely without delay, Carrel Dakin treatment is then valuable if it can be carried out in all its detail. Otherwise simple, very frequent dressing with any aseptic solution which prevents blocking of the discharges should be used. In the early stages of sepsis in joints, conservative opinion still is that rest is essential in order that nature may limit the infection as much as possible. In frank full-fledged sepsis there is no doubt that voluntary motion promotes drainage, this is particularly true of the simpler joints like the knee and ankle, less so of the wrist and elbow. Certain it is that voluntary motion should be begun in all joints as soon as the sepsis has begun to subside.

The late management of these septic joints requires great judgment. It must include such splinting that contractures will be avoided, and every possible method to improve motion and nutrition. Active motion, massage and heat are the principal standbys.

With all our care, there are certain joints in which the resumption of normal function is patently hopeless. These are those that are completely disorganized, or those in which synovia and cartilage have been destroyed. The aim to be kept in mind in such cases is to obtain a stiff joint in the best position for the uses to which it is to be put. In certain joints this position is easy to determine. For a man the best position for a stiff knee is unquestionably about 15 to 20 degrees of flexion. In a woman, about 30 to 35 degrees. In the ankle five to ten degrees of dorsi flexion makes walking easiest. In the wrist 20 to 30 degrees of

dorsi flexion gives the fingers the most powerful grip. In the elbow, the patient's occupation should be the determining factor. As a rule about 120 degrees is the best, but special occupations require special positions.

Mobilization of already stiff joints is a difficult field, and depends entirely on the cause of the fixation. Boney ankylosis, total or partial, is generally best left alone if position is satisfactory. If for any reason, such as the keen desire of the patient, it is necessary to obtain motion, operation may be tried. The best type of operation depends on the joint. Arthroplastics, with the interposition of some form of membrane or flap are principally useful in the hip. In all other joints simple excision done with exact care and judgment to remove enough bone, but yet to preserve ligamentous and muscular attachment are best. Attempts to obtain motion in knee joints which are ankylosed by bone are almost uniformly failures because they substitute weak, painful, partially movable joints for strong, stiff, painless ones.

Where stiffness is due to adhesions, atrophy, or inflammatory thickening, slow gradual methods of stretching and voluntary exercise are uniformly more satisfactory than forcible passive manipulation. Few indeed are the cases where forcible manipulation under an anesthetic is of the slightest permanent good. Patience and gentleness give the best results.

SUMMARY.

To sum up then:

Restore normal relations as nearly as possible.

Drain sepsis.

Remember that voluntary motion hastens return of function.

NON-TUBERCULOUS PLEURISY.*

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In this paper the discussion will be limited to "The Occurrence of Non-Tuberculous Fibrinous Pleurisy" and therefore cases of empyema and exudates will be excluded.

Considering the fact that most cases of fibrinous pleuritis are caused by the action of the tubercle bacilli, there still remain a sufficient number to require careful consideration and study.

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Massachusetts General Hospital records state that out of 225 routine post mortem cases, 160 showed pleural involvement. The extent of pathology in these cases varied from small limited adhesions to frank inflammatory changes.

Lord (1) states that although the tubercle bacilli is the frequent cause of pleuritis, either alone or in combination with other organisms, it is not yet possible to state, with any degree of accuracy, in what proportion of cases it is a factor. He is also of the opinion that fibrinous adhesions and scars so commonly found in the pleura, especially in the bases and apices, may be accounted for by causes other than the tubercle bacilli.

This last point is worthy of thought on account of our present tendency to consider the majority of thoracic adhesions demonstrated by the X-ray, as evidence of past or present tuberculosis, regardless of the fact that no other indication of pulmonary pathology can be found.

Fibrinous pleurisy may be roughly divided into primary and secondary cases. The tubercle bacilli together with associated organisms are by far the most common cause of primary lesions, while traumatism accounts for a few cases.

SECONDARY TYPE OF FIBRINOUS PLEURITIS.

The secondary type is that which concerns us most in this paper. It may arise from many infections other than tuberculosis, such as non-tuberculous affections of the lungs and bronchi, as well as extra-pulmonary lesions in the endocardium and pericardium, tonsils, teeth, upper respiratory tract, liver and gall bladder region. Peritoneal infections, infections of the appendix and of the uterus also cause inflammatory changes in the pleura, while typhoid fever sometimes leaves a pleurisy as a sequela.

INTRAPULMONARY CAUSES: PNEUMONIA.

Of the intrapulmonary causes of plastic pleuritis the pneumococcus and its associates are the most frequent. This association is a well known aid in diagnosis. The on-set of pneumonia, especially when the diaphragmatic pleura is initially involved, sometimes causes considerable confusion in diagnosis owing to the location of the pain.

Capps (2) in his splendid article "Clinical Study of Pain Arising from Diaphragmatic Pleurisy," has clearly shown that the visceral pleura is not sensitive to pressure, and that irritation of the parietal layer causes sharp pain

over the corresponding cutaneous area. Capps' further studies on the diaphragmatic pleura revealed the fact that when the outer margin of the diaphragm was irritated, the pain did not occur over the corresponding topographical area, but manifested itself in the hypochondrium and abdominal walls, sometimes as low as the groin. This reflex pain was probably due to the fact that the marginal pleura receives its sensory nerve supply through the lower six intercostals, and that the referred pain was attributable to an irritation of the corresponding sensory segments in the spinal cord which supply the abdominal wall.

Irritation of the central pleural surface of the diaphragm, however, caused pain in the neck along the trapezius muscle working through the phrenic nerve and third and fourth cervical segments.

To summarize the sensory manifestations of acute basal pleurisy: Only parietal involvement causes pain over the affected serous membrane in the majority of cases. When the outer half of the diaphragm is involved, referred abdominal pain is often present. If the process extends to the inner half of the diaphragm sensory disturbances along the trapezius are also registered.

Acute fibrinous pleurisy is not necessarily tuberculous and the following case is cited as an example:

Case No. 101661, male, married, age 32; height, 5 feet 8 inches; weight 150 pounds. Previous history unimportant except that one maternal aunt died of tuberculosis. Patient consulted internist on account of severe pain in the left thorax between the fourth and seventh ribs in the axillary region. This pain was associated with a catchy cough, some bloody expectoration, night sweats, and an afternoon temperature of from 100 to 100.3. Pulse, 90 to 100; respiration 24. The clinical symptoms had persisted for the previous sixteen days. A physical examination showed some retraction over the right apex associated with markedly roughened inspiration in front, while over the axillary region of the left lung, a point at which the patient felt pain, saddle-rub friction and pleural rales could be heard on auscultation. Stereo plates showed a pleural cap over the right apex, and a small limited subpleural, smoke-like shadow under the pleural involvement in the left thorax. The ultimate study of this case showed it to be one of aspiration pneumonia, or early pulmonary abscess, probably the sequelae of a tonsillectomy performed six weeks previous. The case was re-examined every few weeks and during this time, the pathology gradually disappear-

ed. A final investigation which included stereo plates made at the end of the tenth week revealed no abnormality.

This case presents pleural findings and clinical symptoms suggestive of tuberculosis, and a mistake could easily have been made in considering the night sweats, blood spitting, temperature, and cough, associated with the physical findings and acute pleurisy as conclusive evidence of pulmonary tuberculosis.

OTHER INTRAPULMONARY CAUSES.

Such pulmonary affections as bronchiectasis, gangrene, abscess, bronchitis and cases of streptothricosis and actinomycosis can easily cause a plastic pleuritis, either by direct extension or by secondary infection through the lymph channels. Pulmonary infarction may cause pleuritis. Actinomycosis of the pleura alone is rare. It usually occurs from a similar lung lesion or from actinomycosis of the epiglottis. The same infection in the abdomen has been known to rupture the diaphragm.

Streptothricosis of the pleura is nearly always secondary to lung involvement.

Syphilis of the pleura is a very infrequent occurrence, but does occur associated with specific disease of the lung. The following case suggests such a condition:

Case No. 67836, male, age 43, married; weight, 226 pounds; height, 6 feet 4 inches. Complains of bronchitis of long standing. Has a daily temperature of 99.6 to 100. Pulse 96. Physical examination and chest stereos show that the lower left thorax is filled by a massive lesion involving the pulmonary tissue and the pleura. The Wassermann reaction was four plus and persistent. Salvarsan was administered by the usual method for a year's time. This was accompanied by a progressively favorable change in the lesion. After treatment, the pulmonary involvement had almost disappeared; the only remaining evidence was a considerable amount of pleural thickening. The behavior of this lesion under specific medication suggests its probable luetic nature.

Finally, bronchial glands harbor many infective agents which frequently find their way to the pleura.

SECONDARY PLEURISY ARISING FROM EXTRA-PULMONARY SOURCES SECONDARY TO LOCAL DISEASE IN ADJACENT ORGANS.

Secondary pulmonary involvement is not an infrequent occurrence in infections of the peritoneum. The lymphatics of both serous cavities are in close proximity. The following case illustrates such a condition:

Case No. 10260, male, age 51, Comes to internist complaining of night sweats, cough, expectoration with pain in the left lower axillary region of the thorax. The above clinical picture had existed for about six months and during that time the patient had lost over forty pounds in weight. A physical examination showed pleural crepitations over the seat of pain in the left thorax, with slight dulness on percussion. Stereo plates revealed a small amount of fluid. Some abdominal pain, indefinite in character, together with evidence obtained in the history, led the surgeon to make an exploratory abdominal incision. This revealed a malignancy of the spleen, with peritoneal involvement. Cultures obtained at operation from the peritoneal inflammatory surfaces gave a frank growth of *B. Coli*. The associated pleurisy in this instance was undoubtedly secondary either to the abdominal malignancy or the superimposed colon bacillus infection. This case had been twice diagnosed as pulmonary tuberculosis with acute pleurisy.

Pericardial infections will often cause a secondary pleural involvement which is difficult to diagnose. Capps' (2) experiments showed that when this area was affected, pain in the neck was often manifested, acting through the phrenic nerve, as in the case of central diaphragm irritation.

OTHER EXTRAPULMONARY DISEASES CAUSING PLEURITIS.

Pleurisy is sometimes associated with certain forms of rheumatism and terminal diseases.

Venous congestion which causes the pulmonary tissues to be chronically bathed in lymph often sets up a chronic irritation of the pleura. It is questionable if this in itself causes fibrinous adhesions, but such a condition can and does stimulate the further development of small foci already imbedded in the pleura, the exaggeration of which may cause permanent adhesions.

Shaw (3) performed experiments on rabbits which showed that a collapsed lung was more susceptible to invasion by the tubercle bacilli than the remaining overworked organ. This in turn gave rise to the idea that old adhesions and pleural effusion which render portions of the lung immobile may cause a suitable field for the tubercle bacilli and that such adhesions might, in some cases, be considered the cause rather than the result of pulmonary tuberculosis.

CONCLUSION.

In the light of our present knowledge of focal infections, is it not reasonable to think that small patches of pleural irritation as well

as frank lesions, may come from the dissemination of extrapulmonary non-tuberculous, focal infections?

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2. Capps: Amer. Jour. Med. Sci., March, 1916, vol. CL, p. 383.
3. Shaw: Amer. Rev. Tuberculosis, vol. 8, page 410.

RESUME OF A SERIES OF CASES OF ECTOPIC GESTATION AND RUPTURED GRAFFIAN FOLLICLE

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We had in our service between May 8th and May 28th, at Harper Hospital, five cases of ruptured ectopic gestation, one of acute hemorrhagic salpingitis and two ruptured mature Graffian follicles, also a ruptured ectopic operated in rural Michigan.

Chart of the histories of those cases on next page.

A. The pathological specimens were all examined by Dr. P. F. Morse, of Harper Hospital, who confirmed the clinical diagnosis.

B. In three of these ectopics, the rupture of the tube took place within the proximal one inch and these cases showed larger quantities of blood and clots and extreme shock. In this series we did not find any of the so-called tubal abortions. In the two cases of ruptured mature Graffian follicles, the symptoms were very closely allied to those of ectopic, the point of rupture, usually taking place about the center of the posterior or free surface of the ovary. We found in both instances small blood clots attempting to plug the opening, at the point of rupture.

C. Case ectopic, number three, in table, was admitted to the hospital, after being sick at home for five days before calling a family physician, as one of intestinal obstruction, very great distention of abdomen only partially relieved by enemata. At the time of operation, numerous large plastic clots were removed from the loops of the intestine; as the paresis persisted, in spite of frequent gastric lavage and enemata with pituitrin, 48 hours after operation an Enterostomy was performed, but this did not relieve the patient and she gradually weakened and died in three days from ileus.

In conclusion, we wish to emphasize, that in our experience, there have been many ruptured ectopics without history of "missed" men-

	Ectopic								Rupt.	Foll.	Acute Hem. Sal.
	1	2	3	4	5	6	7	8			
1. Age	28	31	43	35	28	23	22	30	24		
2. Previous Pregnancies	0	2	1	0	3	1	0	1	1		
3. Previous History Pelvic Inflammation	yes	0	yes	0	0	yes	0	0	yes		
4. Normal Menstruation	0	0	0	0			yes	yes	yes		
5. Number of periods missed	0	1	0	2	0	0	0	0	0		
6. Normal onset, amount scant, spotting	yes	yes	yes	0	yes	yes	0	—	—		
7. Hemorrhage (Metorrhagic)	0	0	0	1	1	0	0	—	—		
8. Sudden severe tearing pain lower quadrant of abdomen	yes	yes	yes	yes	yes	yes	yes	yes	yes		
9. Pain in rectum	yes	yes	no	yes	yes	yes	no	yes	no		
10. Pain radiated down thigh	yes	yes	yes	yes	yes	yes	no	no	yes		
11. Nausea	yes	yes	yes	yes	yes	yes	yes	yes	yes		
12. Vomiting	yes	yes	yes	yes	yes	yes	yes	no	yes		
13. Shock	slight	extr.	yes	mark.	extr.	slight	no	no	no		
14. Fainting	yes	yes	yes	3x	4x	yes	no	no	no		
15. Temperature	99	100	99	101	100	99	102	99	101		
16. Pulse	116	122	112	120	120	120	104	110	110		
17. Abdominal tenderness	no	yes	yes	yes	yes	yes	yes	yes	yes		
18. Abdominal Mass palpable	no	yes	no	yes	yes	no	no	no	no		
19. Pelvic Mass palpable	yes	yes	yes	yes	yes	yes	no	yes	?		
20. Leucocytosis	yes	yes	mark.	mark.	omit.	slight	yes	yes			

strual period and in many cases there is a history of normal onset, scanty flow, with spotting. Along with the characteristic symptoms of rupture, we have noticed that these patients complain of pain in the rectum and pain referred down the thigh on the affected side.

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etiological diagnosis must be made in order to render efficient treatment as well as to make a safe prognosis. There is no more alarming condition which the physician is called to treat, and its therapy at the best is very unsatisfactory. In many cases, it is a terminal affection; so that Cohnheim said, "A man does not die because he gets edema of the lungs, but he gets edema of the lungs because he is on the point of dying." This is an extreme statement, for there are cases in which we can save the patient from a certain death. Furthermore, even if we are almost sure that death will claim its victim, the laity always expect us to do something"

PATHOLOGY.

There are two main groups of cases, viz (1) Inflammatory, such as one sees in influenza, and which has been so well described by Sahli, and (2) Non-inflammatory or Mechanical. In an attack, the capillaries of the lung rapidly dilate and serum exudes into the interstitial tissues and into the alveoli, soon filling the bronchi. The increased permeability of the vessel walls is probably not due entirely to mechanical causes, but is also due to the local action of toxines bacterial or otherwise. On section through the boiled lung, one finds the alveoli dilated, their walls swollen, and the blood vessels distended. The alveoli are full

THE COMMONER CLINICAL TYPES OF ACUTE PULMONARY EDEMA AND THEIR TREATMENT.

W. H. MARSHALL, M.D.

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We shall have little to say about the chronic edemas, arising from passive congestion such as one finds in old mitral disease, or about those occurring towards the end of exhausting diseases; such as tuberculosis, pernicious, anemia, or diabetes. In such cases, there is little exudation and life is not so immediately threatened as in the acute edemas under consideration.

Acute pulmonary edema is due to the sudden effusion of serous fluid into the air vesicles and interstitial tissues of the lungs. It is not a disease 'sui generis' but is secondary to a variety of conditions. It is for this reason that it is a serious clinical problem, for a careful

of a greyish opaque mass, mixed with desquamated epithelial cells and leucocytes, these latter occurring in great numbers if the edema is an inflammatory one.

SYMPTOMS AND SIGNS.

The onset is sudden, with great dyspnea and extreme collapse. The patient presents an anxious appearance, his hands and feet are cold, and he may have cold sweats. There is no fever unless the underlying affection is a febrile one. The most important diagnostic criterion of acute pulmonary edema is the profuse expectoration of a thin frothy, bloodstained sputum, in severe cases exuding from the mouth and nostrils in large quantities. It is rich in albumen and soon coagulates. There is a varying amount of cyanosis. The findings on percussion are variable. Usually the note is tympanitic or hyperresonant. If the attack lasts a few hours, one may get an impaired note at the bases behind, and a tympanitic note in front. On auscultation crepitant and loud moist rales are heard all over the chest. The pulmonary second sound is accentuated. The X-ray picture shows a diffuse mottling.

IN CARDIO VASCULAR RENAL DISEASE.

Attacks of acute edema of the lungs are frequent in chronic nephritis with hypertension. The left ventricle, under abnormal strain becomes hypertrophied, but gradually, the limit of cardiac reserve is reached, for the heart muscle is involved by fibrous changes. Thus we find progressive weakness of the left heart, and so a disproportion between the work of the right and left heart. Following any unusual exertion, a sudden alarming attack of pulmonary edema may occur. It is likely that toxemia may also increase the permeability of the pulmonary capillaries. The milder attacks pass off promptly enough after a little rest, but many of them require the most energetic treatment to save the patient. The prognosis should be guarded in any case, for while one may see such patients with occasional attacks of cardiac insufficiency over many years, however, these breakdowns mean the beginning of the end; for they indicate that the cardiac reserve power is being gradually used up. The patient should be put to bed and propped up. Venesection is of great value. Bleed until the blood pressure falls to about 160. If the dyspnea is intense, give morphine gr. 1-8th Atropine gr. 1-150. A drop of spiritus glycerilis nitratis on the tongue, may be used to relieve arterial tension,

and may be repeated every half hour until the attack passes off. Rest in bed is imperative and the diet should be restricted, especially as to proteins. The patient must be warned to limit his exertion and to guard against exposure to extreme cold. Cardiac stimulants such as digitalis may be necessary, and saline purgatives may be given as needed.

IN ACUTE NEPHRITIS.

A moderate edema of the lungs is frequently observed in the early stage of an acute glomerular nephritis. We saw it a great many times in cases of so-called trench nephritis in 1916-1917. On account of occlusion of the glomeruli, the excretion of water is interfered with, and the retained toxines may irritate the pulmonary capillaries. At the onset of nephritis, it is part of the general edema and is not generally serious, but in the later stages, it may be the result of a final heart failure and so be of grave significance. Incisions in the legs will drain off a lot of fluid. Elaterin gr 1-10 in three hourly doses in the early morning hours, or magnesii sulphas one ounce in hot water are old standbys. Hot air baths or hot packs may lower arterial tension and start dia-phoresis. Pilocarpine is to be avoided as it increases edema of the lungs. Epinephrin is not safe, because the adrenal system is already over active in nephritis. Liquids in large quantities, proteins, broths, spices, and alcohol should be forbidden. During the first three days, limit the diet to: Juice of one lemon, $\frac{2}{3}$ cup of water, 6 tablespoonsful of milk sugar. Serve this four times a day. This contains about 1500 calories, contains no protein, and tends to make the blood and urine alkaline. After a few days, the excessive protein waste will be excreted, and a more liberal diet may be given.

IN HEART DISEASE.

In aortic disease, especially aortic insufficiency, much more rarely in stenosis, aortitis, and coronary sclerosis, attacks of acute edema of the lungs occasionally occur and are often fatal. Overstrain may produce a sudden dilation of the left ventricle, the mitral ring stretches, and the mitral valves become incompetent. In the meantime, the right ventricle continues to act as usual, and thus the tension in the pulmonary capillaries is increased. This produces transudation into the alveoli and interstitial tissues, not only at the bases, but more or less generally. Acute edemas very rarely occur in

mitral insufficiency, for the stasis is always gradual in such cases, but in mitral stenosis they are not so rare. Hypertrophy of the right ventricle may maintain a satisfactory circulation for several years, but as the lesion is a progressive one, sooner or later, attacks of decompensation occur and the lungs become rapidly engorged. Sometimes relief is obtained by a profuse hemoptysis, or by a sudden dilatation of the tricuspid rings. In chronic myocardial degeneration, cardiac feebleness becomes progressive and a little unusual exertion may cause a serious dilatation of the heart to occur. An attack similar to asthma comes on, but with frothy mucous expectoration, anginoid pains occur, and an acute pulmonary edema may terminate the scene. Certain cases of paroxysmal tachycardia in which the attacks are of some length, may develop an edema rather acutely. Death may occur at this time, but more often, a normal rhythm is established and the patient is safe for the time being. In elderly patients with muscle or valve involvement, the prognosis should be guarded. If we are to save these heart cases, treatment must be prompt. For the anxiety and distress, nothing equals morphine. If the veins are distended, a venesection should be done. Cardiac stimulants should at first be given intravenously. My favorite is Digalen which usually gives results in 2 to 5 minutes. If the patient improves enough to take oral medication, follow this up by full dosage of digitalis. As you all know, digitalis is slowly absorbed and it often requires several days to note the effect. The Eggleston system of dosage is to be preferred in which the amount of tr. digitalis necessary to digitalise the patient is given in the first 24 hours. Give $2\frac{1}{2}$ minims per pound of body weight, using a standardised tincture. Give this amount in four doses six hours apart. This should be followed up by a smaller tonic dose for several days. Another drug which occasionally works wonders, is strophanthin intravenously. Give it very slowly, in dose of 1-250 grain and repeat in two hours if necessary. This drug seems to act specifically on the myocardium, increasing tonicity and contractility. If the patient has been taking digitalis before the attack, one must be cautious as to dosage; for the establishment of tonicity may allow the digitalis to become active and so produce a heart block. Nitrates should not be given unless the blood pressure is very high. I know of no specific treatment for paroxysmal tachycardia. If the pa-

tient survives one of these acute attacks of edema, good care must be taken of the general health, sudden exertion or excitement are to be avoided, and attention must be paid to the underlying cardiac pathology.

IN THE ACUTE INFECTIONS.

In any of the severe acute infections, especially in pneumonia, sepsis, typhoid, acute edema of the lungs may occur. The edema of influenza is somewhat different and will be discussed later on. In these infections the edema is due to heart failure. The myocardium degenerates from starvation, toxemia, or infection. There is also toxemia of cardiac conduction system as well as vasomotor paresis. In treatment, it is important to not disturb the patient. Frequent or exhausting examinations should not be made, nor must the patient be allowed to make any exertion. Abdominal distension must be kept down. Feeding should be as liberal as digestion will tolerate. Little is to be expected from cardiac stimulants on account of the widespread degeneration of the heart muscle fibres, however they are generally used as a last resort. Digalen, in small doses, e. g. min. 5, intravenously or intramuscularly, is as useful a preparation as any. Atropine, in small doses, e. g. gr. 1-1.50 every 4 to 6 hours checks bronchial secretion and is a vasodilator. Large doses must be avoided as the drug may cause retention of urine. If the patient is very restless, a small dose of morphine will give repose and improve the nervous condition. For emergencies, caffein sodio benzoate gr. 3 subcutaneously is an effective stimulant. Camphor in oil is a great favorite in Germany, but most American pharmacologists find little evidence of its stimulating effect. An icebag to the precordium is a comfort to the patient. Pituitrin and adrenalin have bad secondary effects. Strychnin is going out of favor, for it is not a heart stimulant, although it is a respiratory stimulant. Salt solution by hypodermoclysis, or soda bicarb and glucose intravenously, or per rectum are helpful at times, especially if there be profound toxemia and vasomotor paresis. If used at all, these solutions must be given sparingly and not repeated too frequently lest they increase cardiac dilation.

IN INFLUENZA.

During the recent epidemic, there were many cases of acute pulmonary edema, differing in many respects from any clinical picture we had ever seen. It was rarely ever seen in the lobar pneumonia type but was common in the bron-

pneumonia type, but was common in the broncho-pneumonia form. While the exact etiology of influenza is unknown, it would appear to be complicated by infection with hemolytic streptococcus, which organism seems to produce an acute hemorrhagic infection of the entire air passages. The cough is loose, and the patient usually spits up large quantities of frothy, blood tinged fluid, and in some cases it pours out of the mouth or nose on changing position. This sputum is in marked contrast to the scanty, sticky, rusty sputum of a classical lobar pneumonia. The earliest signs are found about the angles of the scapulae, or between the scapulae. The moisture in the lungs rapidly increases, and soon crepitant and bubbling rales are heard over almost the entire lung area. There is no general edema, little change in the heart outlines, and thus little evidence that the edema is due to a failing heart. It is more likely that the edema is an inflammatory one, due to the local effect of the bacterial toxines on the bronchial and alveolar tissues. The unfortunate patient usually dies in 24 to 48 hours of asphyxia, literally drowned in his own secretions. Autopsy shows an acute inflammatory edema general in distribution, and no evidences of an acute myocarditis. No special treatment seems to have all of these unfortunate patients. Atropine seems to help a little. Morphine gives subjective relief for a time. Oxygen inhalations may relieve the cyanosis, but does not change the ultimate result. While there is not any definite indication from the pathological findings for the use of heart stimulants, digitalis, caffeine and camphor are quite commonly used.

Time will not permit to discuss the rarer edemas following anesthesia, trauma, thoracentesis, gas poisoning, mushroom poisoning, and severe burns. These will be treated, however, on indications from the pathology in each case, and on the general principles outlined above.

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ADDRESS DELIVERED AT THE FIFTIETH ANNIVERSARY OF THE FOUNDING OF THE DETROIT ACADEMY OF MEDICINE, DECEMBER 9, 1919.
W. P. MANTON, M.D.
DETROIT, MICH.

To have survived the vicissitudes of fifty changeful years, with a shifting medical population; to have outlived death and remain strong and

virile and with still an upward bent, is surely a great accomplishment, and proof enough that the founders of the Detroit Academy of medicine planned better than they knew, and wasted no energy in unstable qualities. It is, therefore, eminently fitting that on this the society's golden anniversary, some recognition be taken of the earlier years, and particularly of the men who were back bone and sinew in the days when medical science was still in its infancy, but about to break the bonds of its swaddling clothes.

The past twenty-five or thirty years have seen more progress in the art of healing than had as many preceding centuries; and the opinions of those of earlier days, who were struggling toward the light, are not mere curiosities, but as worthy of attention and consideration as any more recent attainments, which have come about largely through the masterly insight and learning of former generations of the profession. While we may not wholly accept the maxim of the old Polish king that "Science when well digested is nothing but good sense and reason," we can all agree that the strivings of the pathfinders in medicine have resulted in our present day successes and knowledge. Looking backward from the present point of vantage one must marvel at the patience and courage of these men who, with comparatively few instruments of precision, with no laboratory facilities, and with few aids beyond current medical literature—abounding in controversy, contradictions and arguments often based on unproved premises—forward with unwavering faith; conscious that there was something better in the undiscovered, they did their best to attain the goal.

All honor then, to the forebears of the Academy; and let us pause and bow our heads to the men who, though dead, still live in their works.

The story of the Detroit Academy of Medicine is chiefly interesting as a picture of the men who formed its body, or as Carlyle says, it is, "the essence of innumerable biographies."

REMINISCENCES OF THE EARLY DAYS OF THE ACADEMY.
By A. B. LYONS, M.D.

Half a century ago a group of ambitious young physicians in Detroit organized a new medical school—the Detroit Medical College. It was not at first their intention or desire to enter into competition with the ably conducted and successful Medical School of the University of Michigan. That institution, however, from

its rural location could not give its students adequate opportunity for clinical study. What Ann Arbor lacked in this direction, a city with a population of over 70,000 should be able to supply, and it was intended that the new school should affiliate itself with the University school with the distinct object of furnishing to its advanced students the advantages to be gained from Detroit hospitals and medical clinics.

Arrangements were in fact definitely made for courses of lectures to be given in Detroit by members of the University faculty, and it was confidently expected that a considerable number of students who had received University diplomas would come to Detroit for post graduate study. I for one realized that the elementary knowledge acquired by attendance on two courses of lectures (in fact the same course repeated verbatim et literatim twice) could not be regarded as adequate training for a practitioner of the healing art. But the new plan fell through, the University Regents refusing to allow the professors to give the proposed courses of lectures.

Announcements had already gone out of the opening of the Detroit Medical College in the fall of 1868; the local teaching faculty had been organized, and a college building, adequate to immediate needs had been erected in connection with the old Harper Hospital. To provide for a complete course in the elementary branches of medicine, and supply facilities for dissecting and for chemical laboratory work called for strenuous work, but the moving spirits in the enterprise refused to be discouraged.

Just after the term opened, the professor of chemistry, Dr. S. P. Duffield was taken with typhoid fever. I had been acting as his assistant in preparing for his experiments, and so it came about that I took his place temporarily, with a good deal of diffidence, and then I set myself the task of equipping a laboratory for practical experimental work in chemistry, convinced by my own experience at Ann Arbor that this was the only way to really interest the student in chemistry. So it came about that I became a member of the faculty of Detroit Medical College. It was therefore a matter of course that when the faculty of the college organized under the name of the Detroit Academy of Medicine a club for discussion of medical subjects and interchange of views and experiences, that I was privileged to be one of the charter members.

There was not at that time any medical so-

ciety in Detroit that took interest in such discussions. The Wayne County Medical Society was indeed in existence, but one will look in vain for published record of its proceedings. I shall not contend that the Academy in those days made any important contributions to Medical science. **That science as we know it today existed only in embryo.** But there was such a **thing as the art of medicine, and practitioners of that art were keen in the search for the elusive secrets through the knowledge of which the symptoms of disease were being surely brought under control.** Theories of the action of remedies interested them deeply, although many of those theories today appear bizarre and even **puerile—but who shall say that a decade hence this or that pet theory of the physician of to-day will not have passed deservedly into oblivion?**

It was, however, the facts of experience that were predominatingly the subjects of discussion in the academy, as will be abundantly shown by referring to the published minutes of its meetings. Further, however, the organization consisted not merely of men—in those be-nighted days they were of course *all men*—keenly interested in everything pertaining to their vocation, it was practically made up of men working together to make the Detroit Medical College a credit to our city and incidentally to its faculty. We did not wish to be known as a clique, yet it was not easy to find in all Detroit even half a score of physicians who would come into the Academy if invited. There were a few who were attracted to just such a medical club as ours, and any such might be sure of a warm welcome. I mention by name one only of this class, Dr. David Inglis, Sr. I am not sure that he was not a charter member. At all events he was as enthusiastic in his devotion to the Academy as any of the college clique, while we on our part felt honored in numbering as an associate one so ripe in professional experience. A man of few words, he was, singularly modest in the presence of the talented young professors who were the leaders in the Academy, but it was certainly these same professors who constantly looked to him for wise counsel. His office became our accustomed place of meeting; it was fitting that in accepting his pressing invitation we should thus tacitly recognize his leadership.

The moving spirit in the College faculty was the professor of Gynecology, Dr. E. W. Jenks. Stout of build, florid in complexion, genial in

manner yet compelling deference, conveying the impression of a well grounded self-confidence, optimistic in disposition, resourceful, convincing in argument, gifted with rare powers of persuasion, and withal having solid financial backing, he held by natural fitness his position as President of the College.

More brilliant as a lecturer and hence perhaps more popular with the student body was the Professor of Surgery, Dr. T. A. McGraw. His subject was one that always appeals to the medical student, but whatever might have been his subject, his fluency of speech and lucidity of diction made it a pleasure to listen to him. He is the only member of the original faculty of the college who survives, bearing lightly the burden of his years.

Perhaps the most versatile and gifted member of the faculty was the professor of the Theory and Practice of Medicine, Dr. George P. Andrews. He was too scholarly perhaps to be very popular as a lecturer, although this very quality secured for him close attention from the appreciative ones among the students. Even to those who failed to follow his lectures, there was something peculiarly winning in his personality and the human touch compelled those who were at all intimately associated with him to remember him as a friend.

Materia Medica is a subject which wakes little enthusiasm in the average medical student. The chair was filled in the Detroit Medical College by Dr. C. B. Gilbert, with the acceptance accorded to scholarly and painstaking endeavor. He was particularly interested in theories in explanation of the action of medicines, and such theories then, as now, seem to the average student rather hazy and unconvincing. Medicine is popularly credited with specific healing powers which close acquaintance fails to substantiate. The successful teacher of *materia medica* puts emphasis on the fact of healing through medication without elaborate explanation of the *modus operandi* of the remedies prescribed.

A ponderous specimen of the genus homo was our Professor of Anatomy, Dr. N. W. Webber. Deliberate in speech, he dealt with his matter of fact subject in strictly a matter of fact manner. Taking himself seriously, he was taken seriously by the embryonic surgeons, who found his lectures meaty, if dry.

The professor of physiology, Dr. W. H. Lathrop was as unlike the expounder of anatomy as one could imagine. He was a dapper young

man, bearing the stamp of New England culture, carrying himself with becoming dignity, indeed, but conveying the impression of a rather frivolous disposition. However in those days physiology was a minor subject for the medical student, easily crammed for an examination.

Dr. Duffield delivered only occasional lectures on chemical subjects, listened to with the attention and interest always aroused by an imaginative and magnetic speaker. My own teaching in this branch I now realize lacked the inspirational power that comes from permitting the imagination to weave about scientific fact an embroidery of truth half glimpsed.

A striking figure in gatherings of the faculty was its senior member, Dr. J. F. Noyes, professor of Ophthalmology. Old bachelor as he was, he cultivated a gruffness of manner that belied his real nature. Tall, rather angular, a typical Yankee, with the characteristic Yankee shunning of any suggestion of suavity of manner, he was yet companionable in a way. In earlier years he had been a general practitioner of medicine in a rural district in Maine, and in the discussions in the Academy he drew freely on the fund of experience and observation he had then stored up, covering a wide range of medical problems. After the death of Dr. Inglis, his office, centrally located at the corner of Shelby and Fort streets, came to be the customary place of meeting of the Academy.

My own part in the early years of the Academy, up to 1888, was that of scribe and reporter of our meetings for publication in the *Detroit Journal of Medicine and Pharmacy*. As an old man, I take pleasure in jotting down these bits of reminiscence of days of auld lang syne.

I was asked particularly to touch on the circumstances which led to a wholesale resignation of members of the Academy coincidently with a corresponding split in the faculty of the Detroit Medical College. For twelve years this group of medical men had lived harmoniously in close association, a source of mutual satisfaction and profit. What caused the "split?" Well, we were human—that is about the size of it. It is thus that nations that have lived together in peace for a generation or a century suddenly have a falling out. Gradually friction has developed that has been ignored or denied. Rupture comes suddenly as it did in the outburst of the recent great war.

It may be a generation in such cases before abiding peace is re-established; when that time comes survivors do not care to reopen the old

controversy in which neither party is ever quite free from blame. Rather we choose to live over the days of the old friendliness and harmony, and vow that there shall not again be tolerated a rupture of peaceable relations, provided only differences do not involve questions of principle. But there's the rub!

REMINISCENCES OF THE LATER DAYS OF THE ACADEMY.

BY W. P. MANTON, M.D.

At the time I was elected to Academy membership, Nov. 25, 1884, all signs of irritation and disruption, which Dr. Lyons mentions, had disappeared, and only the calm which follows the storm prevailed. Like the ancient Roman family all worshipped at the same altar, and no mention was ever made of the past. Enough of the oldermen were left—among them a group of the choicest just mentioned—to successfully carry on a medical society. Andrews, Connor, and Henry Cleland were the triumvirs, and the lesser lights rallied around them as moths around a candle.

Only one man, as I remember, was looked upon with some feeling of distrust and toleration, but in a semihostile atmosphere he proved innocuous. The exclusive specialties were just beginning to be represented in Detroit, most of those who devoted attention to favorite subjects still remaining in general practice, so that at this time the Academy numbered among its members only a few who were capable of elaborating on any special matter. Drs. Noyes and Connor represented ophthalmology; Chaney, the nose and throat; Yeamans, dermatology; Hal C. Wyman, surgery; and E. W. Jenks, lately returned from Chicago, and the writer, Gynecology and obstetrics.

The general practitioners were ably led by Andrews and Cleland. Other efficient members were not wanting, some of whom, being of more recent graduation, brought much of profit from the schools.

The semimonthly transaction, important enough in themselves for the times, leave, however, only a tarnished recollection, but the men of those days stand out in cameo clearness, and apart in memory.

As the Academy differed in its social aspects from the usual medical society, its interests were guarded with a jealous eye, and it became the pet hobby with those most actively concerned. However life or practice might wag for the rest of the month, the two evenings set

aside for the meetings were almost religiously observed. Indeed, so solicitous was the feeling on these occasions, that the arrival of each member was hailed with satisfaction, and the tardy few had inscribed against their names the monitory word "late," being thus penalized by disapprobation. The ethics of the profession were emblazoned on each member's shield and, however much one might sin in other things, disloyalty and offense against the Academy was not readily forgiven or forgotten. As an illustration, I well recall the castigation which a visitor once received for permitting a production which he gave by invitation before the society, to appear next morning in the daily newspaper. At the meeting following, one of the triumvirs arose with blazing eyes and, shaking a copy of the Times before a startled and awe-struck audience, with articulation almost inhibited by anger, said: "It is not customary for members of the Academy to use the society as a means of advertising themselves, and it seems a breach of courtesy on the part of a stranger who had accepted the hospitality of the society to do such a thing."

The culprit, who was present, excused himself on the plea of ignorance, stating that "The press had always eagerly sought anything from his pen, and he had heretofore found no objection raised to the gratifying of such desires, *pro bono publico*." Each member, I believe, took the matter quite personally, but after some discussion the offense was pardoned. The man, however, was rather generally avoided by the members from that time. "Some men make much noise during their lives" says Jules Simon, "and are unknown to posterity," and so this poor fellow, who afterwards died insane, was soon forgotten.

At the meetings timely, often local, subjects in medicine were taken up and discussed by nearly all present with more or less thoroughness, the limited number of those in attendance giving the younger members confidence; and they were always urged to express their individual observation. In looking over the minutes of these gatherings one is forcibly struck by the full and excellent reports of the discussions put down by the then secretary, Dr. Albert B. Lyons. The neatness of the chirography, the carefully chosen phraseology, and the thorough detail of the proceedings of each meeting present a model which might well be taken as a standard by all recording secretaries.

The years 1883 and 1884 mark an epoch in

the history of medicine; Klebs and Loeffler discovered the germ of diphtheria and made possible sometime later the development of Behring's antitoxine (1890). During the stabilizing of this remedy the Academy many times threshed out the sources and causation of the disease, but got no further than the general opinion of the profession at that time, that sewer gas and insanitation had much to do with its development.

The sporadic appearance of small pox likewise gave rise to much speculation, all of the members except one, the dermatologist, strongly advocating vaccination. "I cannot understand," declared the doubter, "how vaccination is supposed to modify variola so that a person who has been exposed to the latter disease may by vaccination escape"—a sentiment which would rejoice the heart of a twentieth century anti-vaccinationist. In those days scientific discovery often percolated slowly to the various sections of the country outside of the great seaport towns. In 1885, six years after the discovery of the Neisserian organism, a slide of these bacteria was exhibited to the Academy, the first specimen of this microorganism to reach Detroit in this form, although unisolated and unstain-cocci of the same variety undoubtedly abounded throughout the city. In 1885, the Academy agreed to father a laboratory for physical research which some of the members had proposed starting; but it was with the distinct understanding that no money would be furnished. Dr. Henry Cleland offered a room rent free, but as the running of a laboratory requires financial support, and this was not forthcoming, the project never got beyond the purchase of a microtome.

This same year the pathological specimen of an extrauterine pregnancy was demonstrated, the first of the kind to be reported locally. The history of the case is interesting as showing that, although the patient had been examined by a number of leading physicians here, the condition had existed for some time unrecognized.

In an old sketch book I find drawings which I made from the specimen more than thirty years ago.

Such novelties as cocaine, then recently exploited, ruptured uterus, compressed air and artificial respiration in diphtheria, hysterical

testes, antisepsis, insanity and crime, hydrophobia and the like, were occasionally introduced for discussion, and broke the routine of more commonplace offerings.

On the whole, the meetings were conducted in a spirit of earnest helpfulness and form an epitome of the trend of medical thought and treatment of the day.

For some time prior to 1891, storm clouds appear to have been slowly heaping up ominous cumuli in an otherwise clear and cerulean sky, and the rumblings of distant thunder were discernable to those who had an ear to the ground. To the initiated was conveyed the feeling that the supposedly unimpregnable trenches of the Academy were to be stormed, and that the control of the society was threatened by a known force which was likely to put up a winning fight. As the election of officers was imminent, alarm and consternation filled the souls of the leaders, and quickly spread to the loyal cohorts. In order to forestall the possibility of nefarious action on the part of the enemy, a secret caucus of the chosen few was held at the office of Dr. Cleland, and a slate was made up and ratified by all of those present. At the next meeting I found myself overwhelmingly elected to the presidency, and was then credited with being the savior of the Academy, a tradition which was handed down to succeeding years. Whatever rock there may have been upon which a split in the society seemed inevitable, I cannot now recall, but my own opinion has always been that the danger was greatly exaggerated, for the votes cast at that election indicated that the opposing forces were quite unorganized and had no definite plan of action.

From this time on the Academy moved serenely and progressively forward; hardly a ripple has formed to mar the placid surface of its doings, and, while personal opinions have sometimes sharply clashed in open debate, the brotherhood of its members has continued undisturbed.

From the few of us of earlier days who still remain to actively enjoy and profit by the friendly and, sometimes, scientific, transactions of this body, goes up the fervent prayer; "That what will come, and must come, shall come well," in the future of the Detroit Academy of Medicine.

December 9, 1919.

THE VALUE OF THE OPHTHALMOSCOPE IN THE DIAGNOSIS AND PROGNOSIS OF SYSTEMIC DISEASE, WITH ILLUSTRATIVE CASE HISTORIES.*

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In the efforts of the diagnostician to acquire definite information as to the physiological and pathological processes in his patient upon which to base his conclusions, any method that is objective and therefore free from the inaccuracies of the patient's observations and statements, appeals to him as being of immense practical value. From the days of the ancient doctor who announced with marvelous precision the exact condition of the patient's liver by looking in his mouth, from the classical case of Alexis St. Martin studied so painstakingly by Beaumont, to the present day of highly perfected instruments for bronchoscopy, cystoscopy and fluoroscopy, the effort has been to obtain methods of learning visually what is going on in the patient's system.

Examination of the fundus of the eye offers certain distinctive advantages to that of any other method of internal inspection that makes it of peculiar value, not only in the determination of the condition of the eye itself, but in many cases of the processes of the whole system. Nowhere else in the body may a functioning nerve be seen in its undisturbed relation; and the fact that nerve and vessels are seen with remarkable distinctness, magnified to fourteen diameters by the mere application of a source of illumination thru a natural opening, makes the method easy of application, especially with the aid of the modern electric ophthalmoscope.

Embryologically, the optic nerve is not a nerve at all, but the nerve and posterior portion of the eye are an outpouching of the primitive brain, so that in looking at the retina, one is in reality looking directly at brain tissue, and the condition of the retina may often give remarkable insight into the condition of the brain itself. It is possible to observe in the retina and choroid the early stages of a pathological process that will later give manifestations in the cerebrum or in the general system. Also it is true that the onset of some systemic diseases is so insidious, and the symptoms so little marked, that the patient does not seek medical

aid until he becomes alarmed by an affection of the eye that he fears may lead to blindness. Every ophthalmologist has the opportunity of diagnosing such cases and rendering the patient a service by referring him to his physician with the advice that what he thought was a purely ocular affection is the evidence of a systemic disease, and may demand prompt treatment. On the other hand, many a case that is under medical care for some systemic disease, with diagnosis clearly made, may receive information of a prognostic value by a study of the fundus with the ophthalmoscope.

The following case histories have been selected from the writer's files as being somewhat typical of the conditions they are chosen to illustrate.

Case 1. J. M., male, age 34, Finnish farmer, seen Apr. 29, 1919. Came for examination of the eyes with the complaint of a supraorbital headache every morning for the past two months, and gradual diminution of vision for the past month. The vision was reduced to about 6-30 in the better eye, the other being somewhat worse. On ophthalmoscopic examination, choked disks of three diopters were seen in each eye, with numerous spots of retinal hemorrhage. The type of headache, being worse in the morning, and worse on stooping over, suggested nasal sinus infection, and a nasal examination showed polyphoid tissue in both middle turbinate regions. Transillumination and roentgen-ray examination both showed shadows in this locality. The urine showed about 1-8 volume albumin with the heat of nitric test, with granular casts and free red blood cells. There was no edema of the ankles or elsewhere. Diagnosis—Albuminuric retinitis from a nephritis possibly related to the ethmoidal disease.

Prognosis.—The man will probably die within two or three years, regardless of treatment.

Case 2. Mrs. J. F., age 39, seen Aug. 2, 1917, referred by a physician in an adjoining county for refraction. She was confined four weeks previous'y. Two weeks before confinement her vision failed rather suddenly. Her physician stated that she had some kidney trouble at the time of confinement, but that it was better at the time of this examination. Vision was 6-30 in the better eye. Fundus examination showed white spots stellately arranged about the maculae, spots of retinal edema near the disks, and one spot of retinal hemorrhage. Diagnosis—Albuminuric retinitis following pregnancy.

Prognosis.—Good for recovery from the renal disease, fair for recovery of vision.

Albuminuric retinitis occurs in by no means a large percentage of cases of nephritis. Its frequency is as follows: 1. The small contracted kidney, 2. chronic diffuse parenchymatous nephritis, 3. nephritis of scarlatina and pregnancy, and 4. (rarely) in amyloid degeneration

*Read before the Houghton County Medical Society, July 7th, 1919.

of the kidney. The prognosis is good in the scarlatinal and pregnancy cases, but in all the rest is bad, as statistics show that 90 per cent. die within two or three years. Most authors agree that an abortion is justified in a case of albuminuric retinitis of pregnancy with marked loss of vision, especially where some vision has already been lost in a previous pregnancy. The similarity of the involvement of the retina and the kidneys in Brights disease is explained by the conception that the underlying factor in this disease is not the kidney affection but the high arterial tension, with resulting vascular changes, producing disorders in various parts of the body. The organs supplied by end arteries, as the kidneys, retina, brain and heart, are peculiarly susceptible.

Case 3. W. B. male, age 72, seen Dec. 27, 1918. Came for change of glasses with the complaint that the left eye had been getting weak in the past few days. Vision in the right eye with correction was 6-7.5, in the left was limited to the counting of fingers at two meters. The right fundus showed no gross changes, the left showed edema and small hemorrhages near the disk, with arterio-sclerotic areas in the choroid. Diagnosis—Arterio-sclerosis. He was referred for physical examination and treatment to his family physician who reported the urine negative, systolic blood pressure 190.

The typical changes seen in the fundus in arterio-sclerosis are: 1. corkscrew appearance of arterial twigs, 2. a flattening of the veins where they cross the arteries, 3. edema about the optic disk, 4. white streaks bordering the arteries and veins, and, 5. sclerosis of the choroid vessels. With reference to the white streaks bordering the arteries and veins, it may be stated that the so-called blood vessels as seen with the ophthalmoscope are in reality the blood streams. The vessel walls are transparent, and only become visible pathologically, as in arterio-sclerosis. The occurrence of hemorrhages in an arterio-sclerotic fundus, as in the above case, is of bad prognostic import, as it is very often a forerunner of a similar process in the brain, and the patient will probably succumb of cerebral apoplexy.

Case 4. A. S. male, age 53, seen May 2, 1919. Came for refraction of the eyes. He had influenza, followed by pneumonia three months before, and since that time vision had been badly blurred. On examination, vision was limited to the counting of fingers at five and six meters in the right and left eyes, respectively. The fundi showed scattered white spots near the maculae and a few small spots of hemorrhage. The appearance suggested the retinitis of albuminuria or diabetes, but was typical of neither. Urine

examination gave a negative test for albumine, but a very marked reduction with Fehling's test.

Diagnosis.—Diabetic retinitis.

Prognosis.—Based on the presence of hemorrhages, poor.

On referring him to his family physician for treatment, it was stated that at the time of the pneumonia, the diagnosis of "cavities in the lung" had been made, and the patient had expectorated quantities of the most putrid material, in which tubercle bacilli had been demonstrated. As a tubercular infection in a gangrenous process in the lungs may complicate diabetes, it is possible that the diabetes had been the underlying condition.

Case 5. Mrs. M. R., age 43, seen Sept. 17, 1918. Came for refraction, complaining of poor vision in the left eye for the past six months. Vision in the right eye, with correction was normal, vision in the left with the best correction was 6-15 minus, and then only on indirect fixation, indicating a central scotoma. The right fundus was normal, the left showed several white spots in the retina near the macula. The urine was negative for albumin and sugar. There was no specific history, but the patient was married eighteen years before the first child was born. This child is now aged six and healthy. Diagnosis—Retinitis, probably specific. She was referred to her family physician for a Wasserman, but on account of the extreme nervousness of the patient and other difficulties, the specimen could not be obtained. The husband, however, admitted a specific treatment. Recently, the diagnosis of aneurism of the aorta, probably specific, has been made.

Case 6. O. V., male, age 32, seen July 16, 1917. Came for refraction with the complaint of poor vision for several months. Vision in the right eye was 6-20, and in the left was 6-30, and could not be improved with lenses. The fundi were normal except for a pale color of the optic disks, with liminae cribrosae plainly seen. Diagnosis—Beginning optic atrophy. He was referred to a local physician for a Wasserman. This was reported negative by the State Laboratory. Later a spinal fluid Wasserman was obtained and reported four plus by the same laboratory. The vision became progressively worse and the optic disks became whiter on subsequent examination. The condition is hopeless, and will not respond to any known treatment. The patient is by this time probably totally blind, and will probably develop other symptoms of Tabes Dorsalis, which is often ushered in by an optic atrophy.

The ocular symptoms of syphilis are varied. In the secondary stage, there may be opacities in the vitreous, edema of the nerve head, retinal deposits, white spots of exudation about the vessels in the periphery, and later choroiditis with atrophic spots and pigment formation. There may be an optic neuritis followed by a secondary optic atrophy, or there may be a primary optic atrophy. Hereditary syphilis may be shown by the so called pepper and salt

fundus—scattered punctate atrophic areas containing minute spots of pigment.

Case 7. M. P., age 5, seen in consultation, May 23, 1919. The patient had been confined to bed for about a week following a mild attack of bronchitis, and was then in a stuporous condition with high temperature, loss of sphincter control and with a positive Kernig's sign. The physician in charge had diagnosed meningitis, probably tubercular. The laboratory tests on the spinal fluid had been negative. The ophthalmoscopic examination confirmed the above diagnosis positively, by revealing a tubercle in the choroid, the fundi being otherwise negative. The child died about three days later.

Tubercles in the choroid may be demonstrated in from fifteen to seventy per cent of cases of tuberculosis meningitis, also in a large percentage of cases of acute military tuberculosis, and this finding may sometimes be of value in distinguishing between this condition and typhoid.

Case 8. F. L., male, age 26, seen Dec. 22, 1916. Previous history negative. He complained of headache in the left parietal region for two weeks previously, followed by blurred vision in the left eye, gradually increasing to blindness. On examination, vision in the right eye with correction was 6-7.5 minus. In the left eye there was no perception of light. The right fundus was negative, the left showed a choked disk of three diopters, slight contraction of the arteries and dilatation of the veins. The urine was negative. The nose was negative at the first examination, but later a polyp the size of the little finger tip presented from behind the lower border of the left middle turbinate bone, showing an active process in the ethmoid. While under observation, the edema of the nerve head subsided and the disk became white, while perception of light upward and outward was regained. Diagnosis—Optic neuritis and atrophy secondary to ethmoidal infection.

The opportunities for optic nerve and fundus changes from nasal sinus infection are many, due to the close relation anatomically. The optic nerve may be widely separated by dense bone from the sphenoidal sinus or a posterior ethmoidal cell, or it may be contiguous to, or even lie exposed in one of these cells, or the optic nerve of one side may be in relation with an enlarged sphenoid sinus of the other side.

Case 9. Mrs. W. H., age 38, seen June 17, 1919. Has had five children, of whom four are living and well, and has had seventeen abortions. She has been having headaches with vomiting for the past two years. The vision has been failing during this period, but a week previously she could still see to read large print. In the previous two days, however, the vision became very poor so that she could not see to get around

alone. She had had several fainting spells in the previous two weeks. On examination, vision in the right eye was limited to hand movements, in the left eye it was 6-12 minus and limited to the left half of the field only. The fundi showed choked disks, dilated veins, and a few white spots near the macula in the right eye. The urine, nose, throat and teeth were negative. She was referred to her family physician for a Wasserman, which was reported as two plus. Diagnosis—The symptoms and findings suggest a tumor of the brain; the positive Wasserman makes it probable that it is a gumma.

Choked disks are a frequent, and often the first, sign of a neoplasm of the brain, and are found in a large proportion of tumors of the cerebral cortex and almost always in tumors of the cerebellum, optic thalamus and ventricles, but seldom in tumors of the pons or the deep portions of the cerebral hemispheres. The absence of choked disk in a suspected case is of no diagnostic value, but its presence is significant. The choked disk is usually present in both eyes regardless of which side the tumor is located, and most authors agree that the tumor cannot be lateralized by the difference in development of the ocular condition on the two sides.

Other nervous affections may give ophthalmoscopic manifestations. The chief of these is disseminated sclerosis, which is accompanied by optic atrophy in fifty per cent. of the cases.

In conclusion, it may be stated that, while the ophthalmoscopic examination of the fundus oculi may seldom, unaided by other methods of examination, give an indisputable diagnosis, it often leads the way where the necessity for a diagnosis had not been apparent before; that, especially in Bright's disease, arteriosclerosis, diabetes, brain tumors, brain syphilis and tabes dorsalis it may give the first information leading to the recognition of the pathological process, and that in the first three of these it may offer data of a definite prognostic value.

THE IMPORTANCE OF PHYSICAL FINDINGS IN LATE SYPHILIS. CASE REPORT.

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CASE No. A-430. An American, male telegrapher, aged 37, entered with a complaint of "pain in the stomach when walking."

Family History.—Negative as to similar conditions, carcinoma or tuberculosis. He had been married nine years. His wife had had no pregnancies.

His former health had been good. He had had no operations or injuries.

Previous Diseases.—Seventeen years ago he had a gonorrhreal infection together with a sore on the penis. He was treated with internal medicine by a physician. Otherwise the past history is negative.

Habits.—Coffee 1 cup, tea 2 cups, tobacco moderately.

Present Illness.—For six weeks symptoms referable to the stomach have been present. Some "stomach tablets" which were prescribed had given only temporary relief. The characteristic feature of the symptomatology is the presence of pain on walking, relieved only when sitting or lying. Unlike ulcer cases there was no relief nor aggravation from taking food. There was no history of chills, fever, nausea, vomiting, anorexia or loss of weight. The patient's bowels had been regular until two months ago, but had since been constipated.

Physical Examination.—*Expression:* Anxious and distressed.

Scalp: There was a slight degree of seborrheic dermatitis present.

Eyes: A slight external strabismus could be detected. There was a perceptible inequality of the pupils.

Teeth: There were present a second degree of pyorrhea, several fillings and crowns. The dental X-ray showed the upper left first molar and the lower right first biscuspid to be abscessed.

Tonsils: The tonsils were medium in size. A slight chronic pharyngitis was present.

Chest: The lungs presented a few râles on the upper right side. The heart sounds were normal; the pulse was 80; with a systolic blood pressure of 120, and a diastolic blood pressure of 80.

Abdomen: Negative except that some tenderness could be elicited in the umbilical region.

The patellar reflexes were exaggerated, especially on the left side.

Penis: There was a small, round, slightly depressed cicatrix on the glans.

The resumé on the day of examination was set down as follows: "Suggestive of lues III; await return of Wassermann."

The Wassermann was negative.

Further Tests: X-ray of the chest showed two healed lesions in the right lung, probably tuberculosis. It also revealed a high diaphragm on both sides.

Analysis of the gastric contents at fifteen minute intervals after the first forty-five minutes gave the following readings:

Free HC1.		Combined Acids
1st	21	39
2nd	22	46
3rd	33	54

Lactic acid absent. Bile present.

Fleuroscopy showed that the six-hour meal was in the caecum. The stomach and duodenum were negative as far as could be told by the fleuroscope. The plates, however, showed a lesion of the antrum of the stomach, suggesting lues or carcinoma.

The urine was negative except for the presence of a small amount of albumin.

The hemoglobin was normal.

After a thorough reconsideration of the case, an injection of salvarsan was given. One week later a provocative Wassermann was taken and the report returned: Acetone insoluble antigen positive ++ Cholesterinized antigen positive +++

This confirmed the diagnosis of syphilis. Treatment is being continued. The symptoms referable to the stomach have already disappeared. The general appearance of the patient is considerably improved. The patient is undergoing rigid dental prophylactic treatment and also has had the abscessed teeth extracted.

DISCUSSION.

I chose this case in particular to bring out a few reasons why physical findings are of great importance in the recognition of late syphilis. First of all, thoroughness in examination must be emphasized. In this case we may briefly sum up the outstanding points of interest which at once suggest syphilis, viz., the unequal pupils, their sluggish reaction to light, and the slight external strabismus.

Another point of interest in the examination is the exaggerated patellar reflexes. The exaggeration is more marked on the left side. This, together with the dilated left pupil, which denotes paralysis of the parasympathetic nerve supply to the pupil, may possibly be a sign to bear in mind in such a type of case. The chronically inflamed throat is worthy of notation also.

The third point of interest, here, lies in the history. The outstanding point in this patient's history dates back to a venereal lesion 17 years ago. He was treated with internal medicine. We should also bear in mind that even though it probably was a chancre, there was no medicine 17 years ago, nor is there today, which given by mouth would completely cure syphilis.

Furthermore, chancroids are rare things and should be considered in any history as a very suspicious sign of syphilis until it is otherwise proven. Even the reports of a negative Wassermann on either blood or spinal fluid should not too strongly eliminate the possibility of the presence of the disease. A very important test in just this sort of case is the provocative Wassermann. One week after the first injection of salvarsan the blood will frequently, as it did in this case, bring out a positive test. It is surprising, however, that such a large number of cases of syphilis go unrecognized, simply because if the Wassermann returns negative it is taken for granted that the patient has not syphilis. No doubtful case should escape the provocative test. Personally, I believe it is of as much value as the spinal fluid Wassermann.

CONCLUSION.

This case exhibits a few points of interest well worth bearing in mind. First, that in any case with a history of a venereal lesion, syphilis is to be ruled out with caution before a diagnosis is made. Secondly, the importance of careful and complete, detailed examination, together with the ability to pick out the outstanding points which have considerable bearing in the case, can not be too strongly emphasized. There are too many cases of just this type still going along unrecognized and the main reason in each instance can be traced back to an incomplete examination.

GUN SHOT WOUND OF THE BLADDER.

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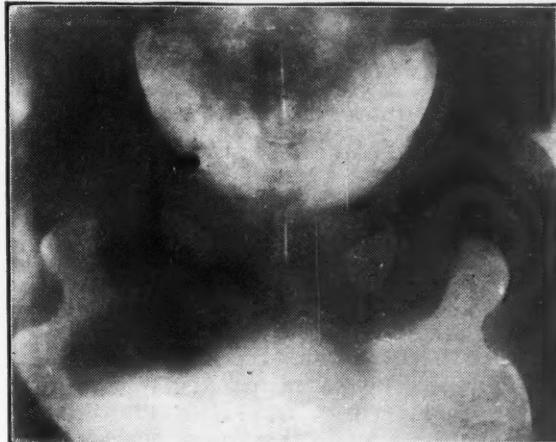
Patient, W. T. of Bellaire, Mich., age 17 years. On Feb. 14, 1918, on trying to kill a dog he had wounded, used the butt of the gun as a club. The gun was discharged, sending a thirty-two caliber bullet through several layers of clothing, through the right ramus of pubis, through the bladder antero posteriorly one centimeter to the right of mid line.

The boy walked to the house about five rods and then discovered that the tip of the little finger and palm of hand were bleeding, and thought that the bullet which had passed through tip of little finger and under side of

palm of hand had missed him otherwise. The hand was dressed and the boy complained of being faint; on further examination the wound in the pubis was discovered. Up to this time he had experienced no pain other than that in his hand. Dr. Heubner of Bellaire was called, who advised sending the patient to the hospital.

On account of heavy snow the trains were stalled and it was twenty hours before he entered the hospital, during which time he passed urine and evacuated his bowels several times without much difficulty. He noticed the urine was slightly bloody.

He entered the hospital on a cot and was taken to the operating room for examination. Pulse 120; Temp. 96.5. No pain, complained only of being tired from the ride on the train. The only evidence of injury was wound in hand



and small round wound slightly to the right of symphysis pubis. Patient was taken to X-ray room and the accompanying radiograph taken. Bullet appeared to be inside pelvis. No lateral view was taken which should have been done as subsequent events proved. The patient returned to bed and after consultation it was decided to wait twenty-four hours for developments. Next morning patient temp. 98.4; pulse, 130. Specimen urine was bloody, slight discharge of urine from wound; abdomen distended, slightly nauseated.

Decided to open the abdomen to see if intestines were injured, tho no blood had passed in stool, and digital examination of rectum was negative, the pulse rate and distended abdomen were suspicious.

Patient etherized and an incision made in the mid line, six centimeters in length from the wound margin upward.

On exposing the bladder, a hole was found about two cm. in diameter. On digital examination of bladder, a piece of bone, size of a dime and several shreds of clothing were found and removed. A hole about one cm. in diameter was found in the posterior wall of bladder, slightly to the right of the anterior opening. No bullet could be felt. Abdomen opened, rectum examined, but nothing found except several dark red spots on loops of intestines that were low in the pelvis. No evidence of bullet on palpation against sacrum and structures posterior to rectum. Abdomen closed. Bladder closed with one-half inch drain tube sewed into anterior bladder wound, catheter placed in urethra. Patient returned to bed in fair condition. Saline per rectum. Bladder irrigated daily through tubes.

On the 21st, patient complained of pain in left buttock; on palpation a lump was felt and under cocaine the bullet was removed from the fascia of the gluteus maximus at practically the same horizontal plane as it entered the pubis.

In a week the patient developed temp. 101, and discharged large quantities of pus through both tube and catheter. Abdominal wound healed nicely, no complications. Bladder irrigated

B. I. D. Developed otitis media that yielded readily to treatment though the temperature went to 104, and pulse to 150. Whether this temperature was due to the ear condition or to an urethral abscess the size of a walnut that developed, I cannot say. This was treated locally with 15 per cent. argerol.

On March 3, patient sat up in chair; temperature 99, appetite good, apparently out of all danger.

On March 13, the pulse went to 150, very thready in quality, respiration sighing. Patient looked very much "washed out." The abdomen was distended, and fresh blood welled up through the super-pubic wound which had been kept open for drainage. In twenty-four hours, a good cup full of clotted blood was removed from bladder. Patient was receiving saline per rectum: Strychnine grs. q. 1-30 every four hours; morphine 1-4 grs. every four hours; and 20 cc. horse serum in one dose. Hemorrhages ceased.

Patient made uneventful recovery from that time on and was discharged able to void his urine and to retain about eight ounces. Patient reports that he is able to do heavy farm work, and feels as well as ever.

INTRAMEDULLARY BEEF-BONE SPLINTS IN FRACTURES OF LONG BONES.

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(The Journal of the Amer. Med. Ass., Vol. 73, no. 18, Nov. 1, 1919.)

In fresh fractures and in reasonably young persons, heterogenous bone pegs may be used with safety and with the assurance that bone growth will not be inhibited. Beef-bone and ivory nails, screws, and intramedullary grafts have been used by a small number of operators.

Beef-bone splints of various sizes are cut out from the long bones of the slaughtered cattle. It is possible to procure from a butcher's shop pieces of the tibia or femur 5 or 6 inches long, and these are split with a saw into suitable sizes. They are then turned in a lathe or filed with a wood-worker's rasp or run thru a dowel cutter so as to be round or nearly round. Those for use in the femur should be about 5 inches long by three-fourths inch wide, for adults, and several smaller sizes should be ready in case the medullary canal should be unusually small, or for use in children. Splints for the humerus should be three-eights inch wide, and those for the radius and ulna, one-fourth to five-sixteenths, and three inches long. The ends of the splint are rounded off, and a hole is bored thru near one end like the eye of a needle. These splints are then sterilized by fractional sterilization, and kept in containers. When it is desired to use them, they are boiled with the instruments.

The fracture is exposed with as little removal of periosteum as possible. The beef-bone splint is pushed into the longer fragment until it is completely within the bone, a long piece of heavy chromic catgut having been previously threaded into the eye of the splint. This double thread hangs out from the end of the bones. An eight-inch drill is now used to bore a hole in the other fragment, distant from the fracture about half the length of the splint. The hole slants a little toward the fracture end. A piece of wire, bent at the middle to form a sort of probe, is now passed into the hole and out thru the fractured end of the bone. The two ends of the catgut cord are then threaded into the wire probe, and the wire is pulled back thru the hole, bringing the catgut with it. The over-riding ends of the fracture are now reduced, either in a Murphy bone skid or by leverage or traction, the catgut cords being tightened at the same time so they will not become caught or pinched. When the bones are in position, the catgut cords are pulled on, and the splint will glide half way from one fragment into the other, so that it will be at exactly the proper point.

The catgut can be threaded into a needle, and sewed into the periosteum or muscle at its point of exit, which will secure the splint so that it will not slide out of position up or down the medullary canal.

Such a splint cannot fit the canal very tightly and it is not necessary that it should, provided that it is prevented from sliding out of place, and this is accomplished by the catgut. L. C. Donnelly.

The Journal

OF THE

Michigan State Medical Society

ISSUED MONTHLY UNDER THE DIRECTION OF THE COUNCIL

A. L. Seeley, Chairman	Mayville
L. W. Toles	Lansing
R. S. Buckland	Baraga

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January

Editorials

ANNUAL MEETING OF THE COUNCIL.

The Annual Meeting of the Council of the Michigan State Medical Society will be held on January 13th at 6:30 P. M., and on January 14th, 1920, at 9:30 A. M. in the Wayne County Medical Society Building, Detroit, for the transaction of regular business and such other business as may properly come before this body. The reports of officers for the year 1919 will be rendered at the first session, on the evening of the 13th.

W. J. KAY, Chairman.
FRED'K C. WARNSHUIS, Secretary.

FEE SCHEDULE.

In this day of increasing cost of almost every commodity and with promise of no abatement, the problem of increased income is of vital concern to every member of the profession. In as much as our professional services is the source of our livelihood it follows that to meet increasing expenses we must naturally resort to the one recourse open to forestall financial embarrassment and increase the rates of the fees we

charge. A number of county societies have adopted new fee schedules. The question of the legality of such fee schedules has been placed before us. We have passed the question along to Mr. Barbour who is associated with the firm of attorneys employed by our Medico-Legal Committee. His opinion is published in full for the benefit and guidance of our members.

Detroit, Nov. 21, 1919.

Dr. F. C. Warnshuis, M. S. M. S.
 Powers Theatre Building,
 Grand Rapids, Mich.

IN RE. FEE SCHEDULES.

Dear Sir:

The question as to the legality of county Medical Societies adopting fee schedules has not been passed upon by the courts in this State. That such a schedule would not be a violation of the Sherman Act seems evident from the fact that proposed agreement has nothing to do with trade or commerce, nor with the restraint of trade or commerce as does the Sherman Act.

The answer to the questions involved does, however, necessitate the construing and interpretation of several of our State statutes. Section 15013 of the Compiled Laws of 1915 being Act 255 of the Public Acts of 1899, is entitled as follows:

"An Act to prevent trusts, monopolies and combinations of capital, skill or arts, to create or carry out restriction in trade or commerce; to limit or reduce the production, or increase or reduce the price, of merchandise or any commodity; to prevent completion in manufacturing, making, transportation, sale or purchase of merchandise, produce or any commodity; to fix at any standard or figure, whereby its price to the public or consumer shall be in any manner controlled or established, any article or commodity of merchandise, produce or commerce intended for sale, barter, use or consumption."

We wish to draw attention to the fact that the act is

"To prevent trusts, monopolies and combinations of capital, skill or arts, to create or carry out restriction in trade of commerce."

The body of the statute provides as follows:

"That a trust is a combination of capital, skill or arts by two or more persons, firms, partnerships, corporations or association of persons, or of any two or more of them, for either, any or all of the following purposes:

1. To create or carry out restrictions in trade or commerce.
2. To limit or reduce the production, or increase or reduce the price of merchandise or any commodity.
3. To prevent competition in manufacturing, making, transportation, sale or purchase of merchandise, produce or any commodity.
4. To fix any standard or figure, whereby its

price to the public or consumer shall be in any manner controlled or established, any article or commodity of merchandise, produce or commerce intended for sale, barter, use or consumption in this State;

5. It shall hereafter be unlawful for two or more persons, firms, partnerships, corporations or association of persons, or of any two or more of them, to make or enter into or execute or carry out any contracts, obligations or agreements of any kind or description, by which they shall bind or have bound themselves not to sell, dispose of or transport any article or any commodity or any article or trade, use, merchandise, commerce or consumption below a common standard figure or fixed value, or by which they shall agree in any manner to keep the price of such article, commodity or transportation at a fixed or graduated figure, or by which they shall in any manner establish or settle the price of any article, commodity or transportation between them or themselves and others, so as to directly or indirectly preclude a free and unrestricted competition among themselves, or any purchasers or consumers, in the sale or transportation of any such article or commodity, or by which they shall agree to pool, combine or directly or indirectly unite any interests that they may have connected with the sale or transportation of any article or commodity, that its price might in any manner be affected. Every such trust as is defined herein is declared to be unlawful, against public policy and void."

We do not think that the proposed fee schedule would involve sub-sections 1, 2 or 3, as it is obvious that personal services cannot be considered trade, commerce, merchandise or a commodity. Sections 4 and 5 however deal more directly with the regulation of price of commodities or merchandise intended for sale or barter within the State.

It is our opinion that the above statute would not be interpreted to include personal service if the question were squarely presented to the Supreme Court.

The question as to the standing of personal service with reference to statutes similar to the one involved in this State, has been taken up in a small number of cases, and our opinion is based on the general rule as determined from these cases.

The right of laboring men to combine for the purpose of regulating their wages has never been seriously questioned, and it seems logical that a law applicable to men who work with their hands should, when no other principle of public policy controvenses, be equally applicable when the general purpose to be accomplished is the same to men whose work is more intellectual—in the instant case, physicians and surgeons. In other words, if the combination for the purpose of regulating what one class of men in a community shall receive for their personal service is valid, because not within the scope of the anti-trust statutes, it cannot be that any combination for the same purpose is prohibited because of the

character or description of the individuals who enter into the combination. The basic element which determines whether or not the combination is legal or illegal is the purpose or end to be attained by the combination, irrespective of the character or description of the individuals who enter into the agreement.

That such is the rule in Michigan has already been determined with reference to laborers in the case of Hunt Vs. Riverside Co-Operative Club, 140 Michigan 538, where the Court at page 549 is discussing the right of laboring men to agree as to the prices for their services says:

"I think it is clear that prior to the enactment of the statute of 1899, courts had no authority at the instance of a representative of the people to enjoin the making of such agreements. They have now then no such authority unless such agreements are forbidden by that statute. If that statute forbids such agreements, it follows that it forbids all agreements fixing and regulating the price of labor, and that associations whether or employees or employers when endeavoring to fix and regulate the price of labor, are engaged in a criminal undertaking. In general it may be said that the statute forbids certain contracts and certain defined trusts. An agreement fixing and regulating the price of labor is not one of these contracts nor one of these trusts."

It would seem therefore, that inasmuch as this statute does not forbid agreements fixing the price of labor, that agreements fixing the price of personal service even of professional men would not be under the ban of the statute.

The decision in the Hunt case was rendered on June 29th, 1905, nine days following the going into effect of a statute declaratory and amendatory of the Act of 1899. We will discuss the effect of this last act in later paragraph.

The question of regulation of medical services by a fee schedule, was rendered in the case of W. A. Rohlf Vs. Harry Kasemeier and Iowa decisions reported in 118 North Western 276. The statute under which a number of doctors were indicted for entering into an agreement for the purpose of fixing, establishing and regulating the price of services rendered. The Michigan statute is probably a little broader than the Iowa statute due to the use of the words *skill* and *arts*. However, the general reasoning of the Iowa case will apply to the Michigan statute.

The Iowa court in deciding that the combination was not illegal, held "That labor is not a commodity within the meaning of the act now in question," citing in support of this conclusion Hunt Vs. The Riverside Co-Operative Club, 140 Michigan 538.

The Court also pointed out:

"It seems to be the almost universal holding that it is no crime for any number of persons, without an unlawful object in view, to associate themselves together and agree that they will not work or deal with certain classes of men who work under a certain price or without certain conditions * * * * that the prac-

tice of medicine and surgery is labor, no one, we think, will question."

As we have stated above the Act of 1899 was amended in June, 1905, by a declaratory and amendatory act, the first two sections of which are as follows:

"1. All agreements and contracts by which any person, co-partnership, or corporation promises or agreed not to engage in any avocation, employment, pursuit, trade, profession or business, whether reasonable or unreasonable, partial or general, limited or unlimited, are hereby declared to be against public policy and illegal and void.

2. All combinations of persons, co-partnerships or corporations made and entered into for the purpose and with the intent of establishing and maintaining or attempting to establish and maintain a monopoly of any trade, pursuit, avocation, profession or business, are hereby declared to be against public policy and illegal and void."

The Hunt case was decided subsequent to the going into effect of this statute, but its provisions were not considered in that decision. We do not think that the amendatory act would affect our opinion as given above, and furthermore we are of the impression that the contemplated agreement does not come within the statute, as it is not an attempt to establish and maintain a monopoly, but rather for the purpose of standardizing the fees to be charged.

We trust that the above will meet your requirements.

Very truly yours,
Douglas, Eaman, Barbour & Rogers,
By Herbert V. Barbour.

THE NEW YEAR.

We are off on a new year—just one more to add to each one's total and, incidentally, a new decade. Of course we want it to be happy and prosperous for each member and reader. For that reason we are speaking plainly and perhaps bluntly—nevertheless the imparting of true facts may awaken a new spirit and present a clearer understanding and thereby achieve a result that will create a new state of affairs, so that in the end added happiness and increased prosperity will be the net accomplishments—here is hoping so.

After a recent issue of the Journal we were accosted on several occasions with the query—"Why so pessimistic regarding the future of the profession?"—We admitted the correctness of thus sizing up our mental viewpoint and substantiated it by pointing out the trend of affairs, just as we have done in the pages during the past three or four issues. In fact, we haven't had much to be optimistic about. We

write personal letters to members, county officials, committees and obtain but few scattered replies. We write suggestions as to proposed plans of procedure or innovations and silence attends. We purposely pass out criticism anticipating we will secure a "rise" and so start an argument and possibly thus awaken some enthusiasm, and all that we get is a postal card telling us to change a mailing address, with an added postscript, "Rah, Rah, Journal." We suggest clinical meetings and extension work, hospital standardization, "Black Plague" control, military training, public health work, compulsory health insurance, etc., etc., and never a card or letter reaches our desk revealing that any of our members are interested in the slightest degree. We offer to give space for the discussion of present day problems, the needs of the profession, case reports, personal observations with a net result of one letter from the wife of a deceased member who has an office examining chair of the doctor's for sale. Can you blame us for being pessimistic and for wondering if we are dead? We know from what is going on in business and social circles, from the literature that comes to our desk, that a vital need exists for us all to be awake. Still the lethargic state appears to be so deep that to create an awakening only an avalanche of ton rocks will produce a "getting busy" frame of mind amongst our Michigan doctors.

Sure, we are all busy with our individual practices and we are going 18 hours or more a day to make the "coin" play the game, pull the wires and have cut out all avenues of communication with our "buddies." In doing so we think we are happy and fairly prosperous and maybe we are temporarily—but what a bump we will receive when we do get hit, as we surely will, if we do not forget a little more of self and commence to think and become interested in the welfare of our neighbors, and the profession as a whole.

We are in a reconstructive state of affairs in practically every avenue of the business, professional, political and social life. Things are being done differently, business is being run on different lines, social affairs are different, government is different and professionally, we have found things different and requiring different methods. The ways of yesterday are past and are not applicable to the problems of to-day. The lessons of yesterday are, however, capable of indicating the direction towards which we

must proceed and they reveal how we may avoid the pitfalls that are in the making.

This New Year must witness that change. The year will not record it unless we experience that awakening, unless we perceive that a collective activity and effort is essential. So we point out the need and outline what must be done—and in doing so we do not assume to be a Moses leading a tribe out of the wilderness. This is our recommendation:

- A. The securing as members, every eligible physician in the state. County societies to make this a special point and to put on a membership campaign with teams soliciting members.
- B. County Societies to hold regular meetings at not less than two week intervals—in certain localities monthly. Said meetings to have 100 per cent. attendance secured by definite missionary work and delegated duty to achieve the presence of every member at each stated meeting.
- C. Program Committees in each society which are charged with the responsibility of making each meeting worth attending. Said programs to cover other than purely scientific topics. Social and fraternal features not to be neglected.
- D. At least two Councillor District meetings during the year in each District.
- E. District Clinical meetings conducted by trained clinicians.
- F. Active, 100 per cent. support to our State Committee on Social and Industrial Relations and responding to the limit to every request that emanates from that Committee.
- G. The same support to our State Medical Legal committee.
- H. A personal interest in the *Journal* and its advertisers. Contribution of papers and case reports that contain scientific observations and practical application of modern accepted principles. Discussion of the problems and needs of the profession, in the columns of the *Journal*, by members from every section of the State. Patronage of our advertisers who make the *Journal* possible.
- I. An interest in our Annual Meeting and a large attendance at the Kalamazoo meeting. That meeting promises to be epoch making in our organization's history.
- J. The cultivation of a broader, truer and deeper spirit of fraternalism. Less con-

centration on the avarices of self and greater consideration for our fellow.

- K. The recognition of our obligations to the public in matters pertaining to Health Conservation, yet, still not unmindful of the fact we are not the tools of either capital or labor.
- L. Participation in the communal affairs of the vicinity in which you reside.
- M. A studious pursuit of the progress that is being made in scientific matters—a careful examination of each patient, a candor and honesty in treatment. Cut out the empirical, the heroic, the miracle, the riding of hobbies—be earnest, honest, conscientious practitioners.
- N. Be men in the sense in which men are required today. When we say men we mean "He-men" and not a substitute.

We recognize that the above exceeds the ten commandments that were set forth for the guidance of a certain people. Likewise numerically they resemble a certain "Fourteen Points" of international fame. In spite of such pseudo precedents we submit that these suggestions when pondered upon will indicate a direction of endeavor that will enable our members, singly and in union, to attain recognition that is merited, recognition that will maintain our status in the affairs of our age and insure a future wherein our interests are conserved. If we do not unite along these or similar activities, if we go on individually and heedlessly, we are in for troublesome times.

What are you going to do about it—Member, County Society, District Society? We are eager to record your 1920 resolution.

COMPULSORY INSURANCE.

Measures are being advocated and legislation projected which, if carried into effect, will revolutionize the practice of medicine and instead of being a profession, medicine will become ordinary business and barter and trade. Yet, I question if one per cent. of the medical profession of this country has anything but the haziest ideas of what Social or Compulsory Health Insurance will mean to him as a citizen, as a tax payer and as a medical man. Your Committee on Civic and Industrial Relation is thoroughly aroused to the importance of this question and the vital necessity of arousing the rank and file of the profession to its effect on

them and on the future practice of medicine. The Committee is not prepared at this time to say whether it is the very best thing for everybody in the world or the very worst. The Committee takes the position that every member of the profession is twenty-one years old and perfectly able to draw his own conclusions, if he will take the time to study the subject. The aim of the Committee, at this time, is to awaken every man to the fact that this is a matter in which he is vitally interested; that he is the one to decide whether the people of this country can best be served by the independent professional man to whom they are individual human beings or by the physician who is to rank as a hired man and who must of necessity consider them en masse, with all the lack of a hired man's responsibility. It is the physician who must decide whether it is better for all to have him the free individual worker or a clock puncher.

That this is not an exaggerated statement, we quote from the book "Standards of Health Insurance" written by Dr. I. N. Rubinow, Russian born, one of the experts and chief propagandists on Compulsory Medical Insurance.

Dr. Rubinow writes: "The established form of administering medical aid in this country (America) is through so-called "private practice." As a matter of fact, only a few professions have succeeded in preserving this system as a predominating one. While private practice for a fee is still the rule in medicine and law, elsewhere this has given way to the usual contract and the stipulated monthly or weekly remuneration. This is largely true of most forms of scientific and social investigation, although *private practice survives to a limited extent, especially in cases of leaders and experts who may serve in a consulting capacity.* Private practice gives way as one large employer, either individual or corporate takes the place of many petty ones. A definite wage contract is preferable, because it is more economical and more efficient. Medical aid among the poor is largely inefficient. It is administered almost exclusively by the so-called "general practitioners" or "family physicians" often jacks-of-all-trades whose persistence is out of harmony with the recent phenomenal development of scientific medicine. This is not at all a revolutionary proposal. It is found on a national scale in *the famous system of Russian village medicine.* In large industrial communities, the poetic "Country Doctor" who took care of several generations has long since given way to the modern

commercialized practitioner. It is preposterous to imagine that the average working man or woman is able to pass upon the professional accomplishments of his physician. But because professional success depends much more upon the physician's reputation than upon his professional standing among his colleagues, the free choice of physician is often defended because it represents a valuable asset comparable to the "goodwill" of commercial undertakings."

In this excerpt you have the opinion of the advocate of Compulsory Medical Insurance on the "general practitioner" as a jack-of-all-trades. He denies the right of choice of physician on the score that the patient is not competent to pass but must have the choice thrust on him. You will note that "private practice" so condemned is to survive only for the benefit of leaders and experts. You will note that Russia has a famous system of village medicine which we are asked to imitate. Having digested these points, read the book in its entirety, this committee would like to hear from members of the profession on this question. If a member is interested, we will gladly send him the very best arguments that we can find on both sides. We will welcome any information on the Russian Village methods of practicing medicine or the methods employed by the Modocs, if they seem to the physician better than those in vogue. This Committee wants to waken the members of this Society and every physician to the fact that a Revolution is on, that it is a conflict in which each and every man is vitally interested. As a citizen, the question of cost and taxes and the possibility of a tremendous political machine confronts him; as a physician, he is to be torn from his high estate as priest and healer and relegated to the arena of business. If that is what the profession wants, they can have it, but at least accept it with your eyes wide open. This Committee is seeking information from all sources. It is not seeking to foist opinions of its own on the members of this Society. It is a committee of nine men widely separated. To get together means a loss of time and money, and in many cases it works hardships. They are not high salaried experts with cost plus at their backs, if they leave home, but men whose very vacations mean work, study and advancement in their chosen work. The question, stripped of all uplift and service verbiage is "Shall medicine continue to be a profession or is it to become a poorly regulated business. This Committee urges the medical men of this state to

take up the question. Take it up individually and collectively, thresh out the arguments for and against. Take no man's dictum but give it the acid test of personal study. This Committee wants to hear from you. It wants information from you. It will send you information. It cannot be bigger than the Society it represents. Its work cannot be a success, unless it can interest every man engaged in the practice of medicine.

GEORGE E. FROTHINGHAM, M.D.

Chairman Committee Civic and Industrial Relation.

Detroit, December 7, 1919.

MEMBERSHIP IN THE STATE SOCIETY.

At least once a year every good business concern takes account of stock, reviews its affairs for the previous twelve months and studies the field to see where it may extend its activities for the betterment of its position.

The practice of medicine is both a profession and a business and it will pay us to take a look both backward and forward to determine whether we are advancing and if so whether at a satisfactory rate.

Membership in the State Society is one of the best criterions by which to judge the condition of the society, for membership grows only when the officers of the County and District societies are busy on the job.

Just before the annual meeting of the County Societies membership is at its high-water mark and tends to slip downwards after that by reason of the slow payment of dues by the slack-twisted and indifferent until the County and State officers get busy and prod them into paying up.

Owing to war conditions and the absence of men in the service our membership dropped last year from the high-water mark of 1917, which was 2,504, down to 2,291 at the time of the annual meeting last June.

Following that meeting the State officers and the Council started an active campaign with the result that on Dec. 1 our membership has reached two thousand five hundred and eighty-three, which is seventy-nine more than it has ever been before.

Considering that our total annual growth has not equaled a hundred, previously, it looks like a magnificent feat to have taken up the slack of over two hundred and added seventy-nine beside in the five months which have been spent on the job.

Evidently our Secretary's efficiency has not suffered by his army experience, for the work has been his, even if the officers do lay claim to some of the ideas which produced the results.

There is, however, another side to the picture. Early in the campaign a survey was made of the State to determine how many men were practicing medicine in the State who, though eligible, were outside the Society and should be within it.

Allowing for estimates and guesses we found approximately 3,000 eligible of whom close to 2,600 are now members.

Thus there are over four hundred good men in the State who are outside the Society and doubtless every one of you knows one or more of them.

The largest non-membership is not, as might be supposed, in the districts remote and hard to be reached, but is in the cities and in direct ratio to the population of each.

Thus Wayne County had close to 350 eligible non-members; Kent County, 84; Calhoun and Genessee, 42 each; Washtenaw, 39; Saginaw 24; Jackson, 10; Bay, 8.

Kalamazoo and Lansing had not reported at the time the table was compiled and men joining since that time will alter these totals a little.

A splendid example of what is "everybody's business is nobody's" is Detroit, which has two-thirds of the men who are on the outside looking in instead of on the inside plugging for the united profession.

We all know many good reasons for these facts, such as the shifting of location which has gone on so greatly in the last two years, and the slowness of the men themselves to make themselves known to their neighboring practitioners; but the County Societies should have social committees whose duty it would be to make the acquaintance of the new man and, if he was a decent sort, see that he became a member of the society at the earliest possible moment.

Nothing will make a man so good a local worker as to find he is wanted and that the men already on the job are not carrying a knife in their boots ready to stick him between the ribs the moment his back is turned.

Some significant facts were noted during the State canvass, the first being that whereas the directory of the A.M.A. credited Michigan with 4,598 physicians the number reported or estimated by the County Secretaries was 3,652, a discrepancy of 946. As the directory lists retired and out of practice men, together with

some dentists and pharmacists, it will be fairly close to the facts to credit 500 more than the Secretaries report making the total 4,150.

If this number of men are practicing medicine in Michigan and our total membership is 2,583 what about the other 1,567?

The County Secretaries reported 500 more eligible than our present membership; is it believable that there are over a thousand doctors in the State not fit to be members of our County and State Societies.

Is it not rather that our exclusive individualism makes us neglect to cultivate friendly relations with those men, and had we done so would we not find a majority were a good sort after all?

Men in every occupation in life are forming associations for mutual benefit, and even in the most highly competitive are finding the association beneficial. In a liberal profession like ours how much more is this true and we must be altruistic enough to ask the others to share what we on the inside know to be so beneficial.

Then let each of us who knows a man on the outside who should be in the Society, either for his good or our own, take pains to show him the benefits of membership, tell him of the good fellowship that exists, the professional standing it will give him and the uplift in his professional attainments. Tell him "it's a good thing, you can't afford to miss it."

C. H. BAKER.

ENDARTERITIS OBLITERANS.

A MEDICO LEGAL CASE.

In the heart of the lower end of the Michigan fruit belt, an old doctor has practised medicine for over forty years, assisted, during the past ten years or so, by his son. Through fat years and lean, wind and snow, sun and storm, heat and cold, these doctors have covered a large rural territory, giving public service for small returns. A community Edenlike in its simplicity where the doctor is always Doc and the patient always Sam or Susan is at last invaded by the serpent, in this case a clever attorney, and trouble has come thick and fast the past year for our two country doctors.

In the winter of 1915-16 a Chicago man working a farm for his brother-in-law began to have pain in the little toe of his left foot. This pain was paroxysmal in character, often running up the leg in sudden cramps, especial-

ly while walking, and so severe as to practically disable him. After some weeks he decided that a corn was causing his trouble and paid a modest fee of 25 cents to a neighbor who specializes in the application of a corn remover. The remedy was applied, a small callus dug out, but the pain continued and the wound did not heal. Some six weeks later, he went to see the elder doctor, who made a few stimulating and antiseptic applications to the ulcer, but the wound would not heal nor the pain abate. Then father and son examined the toe together, decided that some obscure *infection* accounted for the condition and that amputation of the toe would stop the pain and remove the ulcer. There was no apparent infection, just a little redness about the ulcer, and the amputation was made at the base with removal of head of metatarsal bone, the wound closed with three or four stitches, a dry dressing applied, with loose retentive bandage over it, looped a couple of times around the ankle. That the toe was *white* compared with the rest of the foot and toes and did not bleed at amputation, was a fact noted by the doctors but not deemed important. The severe pain continued, and, at his first visit, *three* days after operation, the young doctor lifted up the loose bandage to inspect the wound; but did not dress it. The temperature of half a degree was attributed to sluggish intestinal action. At the next visit, after a couple of days, the same symptoms were present and the same procedure followed. On the sixth or seventh day after operation, the dressings were removed, a little bogginess above the wound noted, so the stitches were removed and dressing renewed.

At the next dressing, or soon after, a little more swelling of foot appeared and the wound, which had only partly healed, was probed, but seemed clean; and a few days later, the swelling on foot was opened and drained, though only a little serum was found. The drainage wound was irrigated with various solutions including Dakin's, but the general condition of the foot was rapidly retrograding and the patient was taken to Chicago three weeks after amputation. There he was cared for by Dr. A. H. Fowler, family physician of the brother-in-law who owns the Allegan county farm, and in a few days the leg was taken off.

Suit was brought in this case and came to trial in March, 1919. The plaintiff charged negligence, that the toe was infected, hence the amputation wound should have been drain-

ed and not closed, that hot boric acid dressings should have been used instead of dry dressings, that more frequent visits and removal of bandages were indicated from the start, and that had the toe and foot been properly treated from the time of amputation the leg would have been saved. This contention was maintained by the plaintiff and his relatives and supported by a deposition from Dr. Fowler and the presence and testimony of a doctor from Chicago named Stephen W. Cox. Dr. Fowler said that he found the amputation wound not completely healed, the drainage wound on dorsum of foot without discharge, the foot swollen and boggy, without circulation, gangrene beginning behind the amputated toe and red streaks running up the leg, that after two or three days trial of hot wet dressings he called Dr. Allen H. Kanavel who sent the man to the Hospital and took off his leg, that he was present at the operation, and that Dr. Kanavel first cut in above the ankle, then below the knee, but got no bleeding, then amputated at middle of thigh and got above the arterial obstruction. He also said that this condition found at operation was the direct result of infection beginning in the foot, which drainage and wet dressings would have checked. Dr. Cox said that he had practiced in Chicago for thirty years, connected with various hospitals and more recently in charge of a large private hospital of his own (five or six beds), had done lots of surgery of all types, much court testimony for both sides but recently only as the plaintiff's witness, had personally cared for over 50,000 patients in the past seven years, and from his extensive experience had no hesitation in admitting that had these two Michigan doctors treated the case properly, with drainage and wet dressings, the man would not have lost his leg. Exhibit A was the plaintiff on crutches.

The case for the defendants was not strong enough to win. The doctors had to admit that they did not understand the case, that they suspected *infection* but could find no evidence of it, and, although we had pointed out, when the suit was first reported, that the basic pathology was arterial obstruction antedating the first connection of the defendants with the case, this defense was not pounded in strongly enough to impress the jury who brought in a verdict of four thousand dollars damages. Every attempt to get information from Dr. Fowler had failed, hence we did not know until

shortly before the trial that Dr. Kanavel was the surgeon, and he was then in Europe. The experts for the defense were local physicians who quite well avoided the traps of the opposing attorneys on infection but were not strong in upholding a theory of which they had no practical knowledge, and neither our attorney nor our experts were convincing enough in explaining why the plaintiff lost his leg. The fight was waged over dry or wet dressings, and to drain or not to drain—barely touching the real fact that the pain in toe, etc., was positive evidence of arterial thrombosis and the loss of leg an inevitable sequel. There were some legal errors in the trial justifying appeal to the Supreme Court, and fortunately the judge granted a new trial which came in October.

I was so sure of the pathology from the early symptoms that I began studying the recent literature for similar cases, and thus was able to define the case as one of *Endarteritis Obliterans*, and began to build the defense around this term. Reference to recent literature, especially the work of Dr. Leo Buerger, were sent to the defendants, and their education thus begun elicited the new facts—that there never was a corn, that the toe was white (i. e. bloodless), and that no arteries bled when toe was amputated. After our attorney absorbed the pathology of this rare disease, he went to Chicago, and, guided by a carefully thought out line of questioning, secured a masterly deposition from Dr. Allen H. Kanavel who amputated the leg. Dr. Kanavel said the case was one of *Endarteritis Obliterans*—a rare disease—that he found the femoral and both tibials blocked by an intermittent thrombosis from point of amputation to ankle; that there was no infection of the artery or the thrombi, although there were some red streaks on lower leg; that disease had been months in developing; and that no treatment could have changed the end result.

At the trial the only new evidence presented by the plaintiff was the testimony of another Chicago medical expert named Alonzo C. Tenney, who is given in the A. M. A. Medical Directory as "Adjunct Professor of Theory and Practice of Medicine at Hahnemann Medical School and Hospital." He frankly admitted that any narrowness in his medical education had been eradicated by post-graduate study at schools like Harvard etc., that he was an expert of large clinical experience and rare diagnostic skill, that *Endarteritis Obliterans*

was common—he had treated twenty-five cases which he saw too late to benefit, but had cured at least 250 cases by attention to diet and proper medication, that the diagnosis was easy and even a country doctor should recognize it in his first few visits, that the plaintiff had a negative (blood) Wassermann, a normal blood pressure, no glycosuria, and was well to-day whereas, had he ever had *Endarteritis Obliterans*, he would have died ere this of some one of the end results of general *Arterio Sclerosis*, that the real condition was one of "*Ascending Arterial Thrombosis*" due to neglect of infection in the amputated toe, which started at that site and backed up to the middle of the thigh "Exactly, gentlemen of the Jury, as though you had a rubber tube filled with water and directed a freezing spray of liquid air against the lower end of the tube."

He was a very clever witness, with the sky as the limit, and is certainly "worthy of his hire." Dr. Stephen W. Cox found "a rough and rugged road to travel" this time. He said he practised in the country while living with or working for a doctor cousin before he began to study medicine and thus was qualified to criticise the treatment of country doctors in Michigan, that the modest number of 50,000 patients treated the past seven years as per his previous testimony was a misstatement—he meant in thirty years—that in this 50,000 cases he had seen no *Endarteritis Obliterans*—the symptoms of which he considered to be hardening of the arteries, hob nail liver, dizziness, etc.; but the classic symptoms of intermittent claudication—ischaemia and erythromelalgia—were unknown to him, and he concluded his performance by testifying that infection and inflammation were synonymous terms. The contrast between the statements of this pair was so marked as to set the jury guessing wherein lay the truth.

The defense took the symptoms as presented by the plaintiff: (1) long continued paroxysmal pain; (2) a small ulcer long unhealed; added by lay witnesses; (3) that there was no corn; (4) that the toe was white; and showed by the defendants that (5) there was no arterial bleeding when toe was amputated, and thus established the diagnosis of *Endarteritis Obliterans*, in conformity with the opinion of Dr. Kanavel, the one man who knew what disease the plaintiff had. The experts who testified for the defense were Dr. W. T. Dodge of Big Rapids, Dr. Arthur L. Robinson of Alle-

gan, and Dr. J. B. Kennedy of Detroit. The writer was present during three days of the trial under studying Yost as Director of Team Play and Strategy.

Dr. Dodge testified that he had practised for over thirty years, mostly as a surgeon, and was chief of Surgical Division at Camp Sherman for a year and had never seen a case of this type until he encountered one at Camp Sherman, that neither he nor twenty men under him recognized the character of the case, and that three amputations were made before getting above the obstruction. Dr. Robinson testified that since the previous trial he had seen his first case of this disease, and demonstrated to the Jury the pathological autopsy findings—the internal iliac being stenosed with thrombotic plugging. He also demonstrated the autopsy findings in a man who dropped dead the previous day, a beautiful specimen of calcareous and thrombotic obstruction of the coronary arteries with all other arteries normal. This man died, he said, of the same disease which the plaintiff had, died because it shut off the blood supply from the heart instead of the leg, that the attacks of pain common in *Angina Pectoris* were due to *intermittent claudication*, the same cry of the nerves for blood as caused the pain in the plaintiff's toe. He then showed by a chart illustrating the circulation of the blood the preposterous nature of the plaintiff's claim of *infective ascending arterial thrombosis* since the network of minute capillaries connecting the arterial and venous systems would not permit the passage of an embolus, however small, from the arterial into the venous system, nor from the venous system, through the lung capillaries into the heart, hence any embolism found in the arterial system must originate there and be carried by the blood stream from the point of origin to the more distant point where found; therefore the emboli found blocking the arteries of the plaintiff's leg originated there and were carried downwards from the point in the thigh where the inflammatory obstructive changes in the femoral artery were developing. Moreover, were this an infective process, the first effect of *infection* on blood clots is liquify them, thus making possible secondary hemorrhage, and that the effect of infection in the obstructed arteries found in the plaintiff would have been a rapid liquification of the clots, a breaking down of much tissue in quick abscess formation, and the re-establishing of the blood stream.

When Dr. Robinson concluded his direct testimony, the attorneys for the plaintiff had little left but to attack him personally as a witness who would swear to anything to protect a brother doctor. But the Jury knew he was telling the truth.

Dr. J. B. Kennedy concluded and completed our defense. He said that in over thirty years of large surgical practice he had seen but two cases of *Endarteritis Obliterans*, the early symptoms of which were those proven present in the case of the plaintiff, showed how the gradually developing obstruction of the artery produced all the symptoms previously testified to, for which amputation above the obstruction offered the only cure. He hammered home all the points made by Dr. Robinson in a positive, convincing way unshaken by cross examination.

The attorneys for the plaintiff were unable to counteract the effect produced by the deposition of Dr. Kanavel, upheld so definitely by all our experts, and the explosion of their absurd theory; hence they were in worse shape than the plaintiff himself, who had one leg left to stand on. Their experts had left town, the local profession stood solidly for the defense, and the attorneys were too ignorant of medicine to manufacture any medical comeback to the positive and convincing defense. Hence their address to the Jury consisted mostly of an attack on the State Medical Society and the "mysterious Dr. Tibbals," whom they credited with *framing up* the defense.

It took the Jury but a short time to bring in a verdict of "no cause for action." The writer is naturally elated, because this verdict rights a great wrong.

The "man of mystery" claims credit only for persistently maintaining that his diagnosis, made on receipt of first statement of facts, was correct, and that continued *driving* in of the actual, incurable nature of the case would convince any jury of reasonable intelligence that justice was with the defendants.

The writer desires to publicly extend his personal thanks to the experts for the defense and his compliments to the experts from "The Windy City" and to express the hope that they collected in advance.

Someone has said that there are three kinds of medical experts: doctors, liars, and damn liars. The experts for the defense were all in Class A.

FRANK BURR TIBBALS,
Chairman Medical Legal Committee.

Bristles.

GREETINGS: Except for the advent of a few more gray hairs, which make themselves known to us when we are vain enough to consult our mirror, it is hard for us to realize that another year has slipped by and closed another chapter in the book of time, while an additional slice has been taken off the comparatively short time that we are permitted to stalk this busy little planet upon which have either fortunately or unfortunately cast our lot, involuntarily.

When we glance back at the happenings of the past year, which has been called by some a reconstruction period following the close of four years of the maddest expenditure of lives and money known to mankind, we recall most vividly, perhaps, the Goliath-like steps that have been made in almost every line of endeavor in the battle for existence.

It is simply a de luxe edition of the old story of supply and demand and no matter what is said or done, aside from the necessary steps to correct the discrepancy in that equation, we will continue to find ourselves in the same position.

What has the medical profession done to keep the pace in this mad race that has been the evolution of the period 1914-1918? It is true that scientifically they have more than held their own—no one can discredit them for their achievements professionally—no one can say that, individually, they have left one stone unturned to place medicine at the top of the professions; but have they not, perhaps, by reason of old musty traditional aloofness, completely overlooked the fact that "a chain is only as strong as its weakest link," that it is only by solid co-ordinated effort that these links can be securely welded into a sound, solid chain of advancement protection of our own endeavors.

Don't stand by and leave it as a matter of course. Get out your hammers, rub the old snake oil on your trusty old right arm and pound every kink or semblance of weakening out of your professional alliance, weld them into something that cannot be overlooked—something that stands on the hill top and shouts out the glad tidings that we have found ourselves and that collectively, we must be reckoned with. Make recognition necessary.

Greetings again and every success for 1920.

Since the question of authority has finally been straightened out in the baseball leagues, we advise the little old public to "wait them out" and "try to get a free pass" instead of "biting at the high ones."

We've often wondered why the average man objects so strenuously to carrying a few bundles for friend wife but sees nothing wrong in bringing home a package of his own. Oh, well! Why worry? It's a lost art.

From newspaper reports, it appears that seats for the senate come high these days. That may explain why the upper house has been up in the air for the entire session.

Now that the Mexican situation is all straightened out—Ananias, go back to your seat. Can't you take a joke?

King Canute acquired fame through his "ability" to make the waters of the sea to recede. The only difference between old "Can" and the present day price regulators is that he got away with it.

When we were kiddies, we opined that we were all dressed up when we were arrayed in our kilts. How times do change. Nowadays, the kiddies mammas have taken up the fad.

A news item tells us that the American Red Cross here has been severely criticized by a prominent body of women for distributing cigarettes amongst our soldiers in France. Merely as a suggestion, it occurs to us that this august sisterhood might favor lollipops instead.

What is it that makes more noise than a pig under a fence? What? No, you're wrong. It's the landlord who talks a blue streak, while he is collecting the rent, for fear you may ask for some needed repairs.

"HOG."

Editorial Comments

The other night we attended a meeting of three county societies. During the course of the meeting one speaker made the following statement:

"I was on the train the other day accompanying a very sick patient to a hospital. In the smoking apartment a prosperous middle-aged man engaged me in conversation and during the course of his remarks he stated: 'I have had a lot to do with doctors in several cities and clinics. I have consulted men of different types. I believe, I have had more than ordinary experience with them and I feel that there is no trade, no business, no other profession that embodies so many dishonest men, so many grafters, so many "fleecers" of the public as the medical profession. It has been my experience that from the man "way up" at the top or the man, the ordinary "Doc" way down at the bottom, one obtains honest opinions and advice. But there is that middle class of "would be's," who are contemptible in their dishonesty, who ride a lame hobby, who endeavor to work you for all you will stand for,—well they are largely crooks in the method in which they deal with people who consult them."

Whew! Certainly a severe indictment. We reflected whether or not this man was not right and perforce we must admit that in part the profession is guilty as charged. The more we pondered the more were we forced to admit the fact.

We are going to cease further comment at this time. We want each reader to reflect upon the subject, discuss it at your meetings, tell us your views, tell us what to do about it.

Just once more—your 1920 dues are payable. Send your check to your local Secretary today. Please, Doctor, do not put off doing so. **Do it now.**

Everybody seems to be strung up on the highest pitch. The trigger is caught back on a hair spring and the most trivial vibration sets it off with a bang. There is a chip on everyone's shoulder and the individual seems to go around looking for some provocation to knock it off. If he isn't very successful he goes about and creates a cause—anything to start an argument. Why? Simply because we have developed a spirit of selfishness, an inclination to disregard the progress and comfort of our fellow and his right to earn a living as well as to take a nibble of the prosperity cake. It's about time to settle down and readjust ourselves. Let's get busy doing so.

Numerically we are advancing. Our membership is now larger than at any time in the history of our Society. There are, however, some 400 Doctors in our State who should be members. Will you help to secure their affiliation? Ask your neighbor to attend a meeting with you? See that he files an application for membership. We need the support every eligible Doctor in Michigan. Please help us to secure it.

Deaths

DR. GEORGE DUFFIELD.

**Resolutions by the Detroit Academy of Medicine,
Passed November 25, 1919.**

Whereas by ruling of the Divine Creator, Dr. George Duffield, a fellow member, friend, and long-time associate, was transferred from the activities of this life, November 12, 1919;

Be it Resolved, that the Fellows of the Detroit Academy of Medicine deeply mourn the loss of a consistent and efficient member, who for many years stood for all that is noblest and best in the profession of medicine, and by his work and example evinced the spirit of brotherhood and the essence of true helpfulness;

Resolved, that this action of the Academy be spread upon its Records, and, as an expression of true sympathy, a copy of the same be transmitted to the sorrowing family.

Dr. George Duffield, a former President of the Academy, was born at the family residence on Congress Street, West, on April 28th, 1859. He came of excellent stock on both sides, his mother's relatives, the Buells, being well-known and prominent people in New York State, while his father's agnates, coming from Pennsylvania, were particularly distinguished in scientific lore, theology, law and literature.

Educated in the public schools of this city, the Philo M. Patterson private Classical and Mathematical school, he finished his preliminary course at the Orchard Lake Military Academy, where a thorough training, both literary and physical, fitted him for the battle of life.

Having shown from his early boyhood a peculiar interest in all that pertained to sickness and suffering, it was natural that he should turn his attention later to medicine, and he was graduated from the Detroit Medical College in 1882.

Following this he spent two years in post-graduate study in Berlin, Vienna and Heidelberg, where he took up a general review of medicine,

paying particular attention to pathology and obstetrics. Returning to this city in 1883, he began practice, opening an office in his father's house, 480 Woodward Avenue. Some years later he became associated with Dr. Henry A. Cleland, one of the oldest and best known practitioners in the city, and occupied offices with the latter in the old Cleland Block, State and Griswold streets. He remained here for many years, succeeding to the practice of Dr. Cleland following the latter's death, and, when the Peter Smith Building was erected on the same site, he continued in the old locality. In 1918 he removed to 80 Griswold Street, a downtown location being more convenient to his professional work. Dr. Duffield was elected to the Detroit Academy of Medicine in 1883, became Vice-President in 1896, and President in 1899. He was greatly interested in the work of the Society and, during the earlier years, did much to advance its interests. Although a fairly active and voluminous correspondent, he did not contribute extensively to medical literature, but what he did write was always practical and timely. In looking over the list of papers read before the Academy during the past thirty years, I find that Duffield's name occurs nine times, and the titles include such subjects as "Carcinoma," "Urinary Casts," "The Treatment of Typhoid Fever," "The Use of Antitoxine in Diphtheria," "Plea for the Earlier Diagnosis and Treatment of Pulmonary Tuberculosis," "Treatment of Diseases of the Heart associated with Tachycardia." These papers were prepared at an early date, when interest in these special subjects was just awakening, and evidence a keen and alert interest in progressive medicine.

During the early years of Dr. Duffield's experience, he devoted much time to pathology; indeed he, and the late Dr. Frank W. Brown, were the only men in Detroit who had had especial training in that subject. As a result they both did quite a laboratory business. Most of this was free work and a labor of love, the profession not yet having sufficient appreciation of the subject to suggest remuneration; so that both Brown and Duffield gradually tired of the gratuitous exhibition, and demanded pay for services rendered. This immediately caused a falling off of the work, and Duffield turned his attention to internal medicine. For many years he was a Visiting Physician to Harper Hospital, and Professor of Medicine in the Detroit College of Medicine, in both of which he later became Emeritus. For 4 years he was Secretary of the State Medical Society and, together with a committee, edited its transactions. He was one of the editors of *The Microscope*, a scientific journal devoted to micro-

scopy in all its branches. For years he edited the Harper Hospital Bulletin, a staff publication, in the interests of the Hospital. Early in his career Dr. Duffield became examiner for several insurance companies, and so greatly did his work along these lines prosper, and so popular did he become with the soliciting force that, during the past decade or so, this occupation crowded out most of private practice, and he gave practically his entire time and attention to this department. At the time of his death he was the Michigan Medical Director for the Mutual Benefit Life Insurance Company of New Jersey, and had the enviable distinction of making more examinations each year than any physician in the United States.

He was also a member of the Wayne County Medical Society; the State Medical Society, and the American Medical Association.

Socially he was connected with the Country Club, the Boat Club, and the Detroit Golf Club.

Every man places, however unconsciously, a valuation on himself; but it is impossible to determine just how Dr. Duffield appraised his personal assets. He seldom spoke in serious mood of his own qualifications, and one can judge him solely by his acts. One mentions the dead only from memory, and at this time memory trots in such overwhelming masses that selection becomes difficult, and what might be put down soon appears trivial compared with that unmentioned.

Four characteristics, however, stand out in Dr. Duffield's life; steadfastness, kindness, self-sacrifice and service.

The deaf, the halt and the blind were his friends and brothers insofar as he could reach out a helping hand in their extremity; he joyed in service, and let no personal gain or comfort stand in the way of doing what he could. The "cup of cold water" in his hands became the kindly, cheering word, the fragrant flower, the box of candy, placed where it would do most good.

In his moral code he was firmly founded; no exigency of occasion could tempt him to depart from that which he thought to be right.

He was a stanch and steadfast friend and, come weal come woe, with his broad shoulder to the wheel would push with all his energy, or, if those he loved lacked vigor, he was quick to assume the total burden to himself. Helpfulness

and service were his foremost thoughts and, harking back over the past years, one fails to ever find him wanting.

By nature sympathetic he sometimes seemed to pass too lightly over serious things, but always at the bottom of his heart he searched for that which would best bring comfort, cheer and quick relief. So truly we may say of him as Antony said of the great Roman:

"His life was gentle, and the elements
So mix'd in him that Nature might stand up,
And say to all the world, This was a man."

W. P. M.

Doctor L. J. Goux, of Detroit, died after a six months' illness at his home December 1, 1919. He was born in 1871. He graduated from the Detroit College of Medicine in 1894. His practice was limited to diseases of the eye, ear, nose and throat. He was on the staffs of Grace Hospital, Detroit, and the Eastern Michigan Hospital at Pontiac. He was a member of the Wayne County Medical Society, Michigan State Medical Society, American Medical Association, and American Academy of Ophthalmology and Oto-Laryngology.

Dr. Richard Leiman, 1692 Gratiot Ave., Detroit, was accidentally shot and killed Saturday, November 8th, while hunting with two friends on the shores of Parry Sound.

Dr. W. R. Dittmars, of North Adams, Michigan, died Sunday morning, November 2nd, at the age of 73 years. Doctor Dittmars has been ill for about two months, death being caused by hardening of the arteries.

Dr. L. R. Lumby, of Pontiac, Michigan, died November 21st, at his home. Doctor Lumby was a graduate of the University of Michigan after which he practiced medicine at Henderson, Mich. and then removed to Pontiac. Doctor Lumby is survived by the widow, four children and two sisters.

The deaths of the following doctors not members of the State Society have been reported: Dr. William P. Gamber, Ann Arbor; Dr. Gilbert A. Povey, Detroit; and Dr. W. H. Landis, Buchanan.

State News Notes

COLLECTIONS.

Physicians' Bills and Hospital Accounts collected anywhere in Michigan. H. C. VanAken, Lawyer, 309 Post Building, Battle Creek, Michigan. Reference any Bank in Battle Creek.

FOR SALE—General Practice in best town north of Grand Rapids; One Thousand Population; Good Churches and Schools; High School on approved list; Good Roads; splendid farming country. My collections were over \$7,000.00 last year. Books open to inspection; opposition nil; nearest competition twelve miles distant. Any good man can do between \$5,000.00 and \$6,000.00 first year. District remarkably free from Hay Fever. Good hunting and fishing within one hour or less by auto. Also good perfectly modern 10 room house; good garage and barn, new, good office up town. All will be sold for about half the cost of house. Reason for selling: Owner wishes to Specialize. Address "Journal 104."

Peter Green, Peter J. DuBois and Frank H. Morris of Detroit were arrested for practicing medicine without a license and Dr. Isaac Cady of Detroit for connecting himself with an unregistered person.

The Detroit Academy of Medicine celebrated its Golden Anniversary on Tuesday evening, December 9th, at the Detroit Club, with a subscription dinner. During the meal an orchestra played. The President, Doctor Ray Connor, introduced the Toastmaster, Doctor Wadsworth Warren. Doctor Walter P. Manton read a paper on "The Past of the Detroit Academy of Medicine." Doctor Frank B. Tibbals on "The Future of the Detroit Academy of Medicine" and Doctor Charles H. Baker spoke on "The Progress of Medicine During the Last Half Century." Several vaudeville acts were staged.

The following guests were present: Doctors C. H. Baker, of Bay City, President of the Michigan State Medical Society; F. C. Warnshuis, of Grand Rapids, Secretary of Michigan State Medical Society; C. T. Southworth of Monroe, Councilor 14th District of Michigan State Medical Society; G. E. Kean, President of Wayne County Medical Society; W. H. MacCraken, Dean of Detroit College of Medicine and Surgery; Captain Harrison of U. S. Army; R. G. Brain, D. M. Campbell, S. E. Crump, W. A. Defnet, Francis Duffield, W. A. Evans, A. H. Garvin, Stewart Hamilton, L. J. Hirschmann, George Lowrie, A. D. McAlpine, P. F. Morse, H. W. Plaggemeyer,

H. H. Sanderson, Frank Walker, Frank Sladen and W. J. Wilson, Jr. (23).

Doctors Daniel LaFerte, of Detroit, Honorary Fellow and C. B. Burr, of Flint, Corresponding Fellow, sat down to dinner with us.

All (34) of the Active Fellows of the Academy were present: Doctors C. D. Aaron, Max Ballin, A. P. Biddle, W. R. Chittick, A. N. Collins, T. B. Cooley, G. L. Connor, Ray Connor, R. W. Gilman, E. W. Haass, P. M. Hickey, C. W. Hitchcock, A. D. Holmes, C. G. Jennings, A. Jennings, H. D. Jenks, G. L. Kiefer, L. E. Maire, W. P. Manton, Walter Manton, W. E. Metcalf, W. H. Morley, Delos Parker, H. M. Rich, F. W. Robbins, H. E. Safford, B. R. Shurly, W. A. Spitzley, H. L. Simpson, F. B. Tibbals, H. R. Varney, J. W. Vaughan, Wadsworth Warren and Hedley Williamson.

The Graduate School of Medicine of the University of Pennsylvania opened in October, and according to George H. Meeker, dean of the University of Pennsylvania, there are sixty-three physicians in actual attendance, about thirty have been turned away because of the present limited accommodations, and nearly fifty are already applicants for the courses of the next semester, which begins Feb. 9, 1920. The general plan for the University Graduate School of Medicine is as follows: A central university organization as now or to be constituted, having as its special business graduate medical education. The co-operation of other university groups, especially the Undergraduate School of Medicine. The co-operation of the hospitals of Philadelphia generally, not as integral parts of the university, but affiliated through their staffs and clinical and physical facilities, in this important movement for Philadelphia, under the educational control of the university. This general hospital co-operation is still in its beginnings. The co-operation of public and private philanthropies, in contributing toward the large funds without which the goal will be difficult or impossible to reach. In 1916, a merger between the University of Pennsylvania and the Medico-Chirurgical College of Philadelphia was effected. By the conditions of this merger the Medico-Chirurgical College became an integral part of the University of Pennsylvania as its Graduate School of Medicine and the heads of the clinical departments were constituted a nucleus for the faculty of the new school. By merger with the university in 1918 the Philadelphia Polyclinic and College for Graduates in Medicine, with its facilities for graduate medical instruction, was further added as the "Polyclinic Section" of the Graduate School of Medicine con-

stituted as above. On this foundation, and with some valuable assistance from the Undergraduate School of Medicine and a few of the hospitals of Philadelphia, the work of the new school has been started.

To the Wayne County Medical Society:

Your Committee to investigate the Dr. W. F. Koch Cancer Treatment, begs leave to report as follows:

The Board of Health kindly placed at our disposal twelve beds at the Herman Kiefer Hospital, with the necessary special nurses, and everything else required, free of charge, so that we could send people there who were not able to pay. We sent there patients of our own, and also some recommended by different physicians as proper cases for treatment. We had altogether nine patients there.

After looking them over carefully, we found some where the diagnosis was doubtful. These were discharged, and some left of their own accord. We had five patients, however, of undoubted cancer, from which we had specimens and microscopic slides, making the diagnosis positive.

We turned the treatment and management of these cases over to Dr. Koch, all we wanted to do was to watch them. Dr. Koch from time to time insisted on certain investigations. First, he wanted thorough histories of the cases, and then diagrams of the location and size of the growth, so that any changes could be readily detected. Of course, we naturally did that ourselves. Then he insisted on scientific blood examinations, the estimation of non-coagulable protein, cholesterol, etc. As we had no available man to make these, Dr. Koch agreed to get one, and we guaranteed that the man would be paid. He also objected to some of the members of the Committee, saying that he ought to have some representative on it. We agreed to put on any and all he would name. He failed to either name any or to find a physiologic chemist to make the blood examinations he insisted on.

In his treatment he was very negligent, not treating the patients regularly or systematically, as he agreed to do. For instance, Mrs. A. he treated five times to wit:

Entered Oct. 23, first treatment Nov. 4-7-11-26-29.

Entered Nov. 4, Mrs. B., first treatment Nov. 11-26-29.

Entered Oct. 28, Mrs. C., first treatment Nov. 4-7-11-29.

The others about the same way.

We had a final meeting with him November 26, when we were at the Herman Kiefer Hospital, and went over all the cases with him. He gave them the injections, and everything was satisfac-

tory, and he promised to attend to the treatment regularly, which he had failed to do before this time. He promised to go there the next day but failed to do so. He came there Saturday, Nov. 29, and he has not been seen since.

As the patients were disgusted with this neglect of treatment, some of them left, the rest we sent home, and closed our connection with the investigation of the subject.

You can readily see that with such few and irregular treatments, nothing could be accomplished and nothing found out about the value, or lack of value, of the treatment.

All of which is respectfully submitted, and your Committee begs leave to be discharged from the further consideration of the subject.

Yours truly,

J. H. Carstens,
W. P. Manton,
J. H. Andries,
J. Walter Vaughan,
James E. Davis.

Announcement is made of the proposal to perpetuate the work of Oak Grove Hospital in Flint. As was mentioned in a former editorial notice, the hospital will retire from the field of psychiatry on April 28th, 1920.

Dr. Irwin H. Neff, formerly Superintendent of the Foxborough State Hospital, Massachusetts, and for the past five years Superintendent of the Norfolk State Hospital in Boston, who is favorably known in Michigan through his previous connection with the state hospitals at Pontiac and Kalamazoo, is heading the new enterprise.

He is assisted by Dr. George K. Pratt who, previous and subsequent to two years in the Department of Neuro-Psychiatry in the Army, both at home and in France, has been a member of the medical staff of Oak Grove.

At a recent meeting of the Board of Directors of Oak Grove, the new organization was voted the good will and endorsement of the present stockholders. The consent was also given to use the same corporate name, "Oak Grove."

It is contemplated by the new organization to purchase property near Flint owned by the former County Club and erect modern buildings.

The League of Red Cross Societies of the Nations of the World is to have a noteworthy American as its General Medical Director. The League is to have its headquarters at Geneva and it will act as a centralized agency for the improvement of public health, the prevention of disease, and the mitigation of suffering throughout the world.

It will serve in cases of national or international disaster and will act as a medium for bringing within the reach of all the benefits of present known medical facts and new contributions of science and medical knowledge.

The American who is to have charge of the public health work and the general medical activities is Doctor Richard P. Strong, Professor of Tropical Medicine at the Harvard Medical School. Doctor Strong graduated from the Johns Hopkins Medical School in 1897. This was the first class to graduate from that institution. He made a brilliant record as a student of tropical diseases in the Philippines. He was the leader of the international corps of workers who wiped out the typhus epidemic in Serbia. During the war he was in charge of the division of infectious diseases of the American Expeditionary Forces and of the investigations carried out upon trench fever. He also was the representative of the A. E. F. and the United States on the Interallied Sanitary Commission, which co-ordinated the sanitary and medical work of the various Allied armies.

For his services he won the American Distinguished Service Medal, the British Order of Commander of the Bath, was made an officer of the French Legion of Honor, and was made Grand Officer of the Serbian Cross of St. Sava. He also holds the Chinese Order of the Striped Tiger.

If Dr. Fritch of Detroit had been released from Jackson Prison by means of a pardon, he would never again have hung out his shingle in Michigan. As it was, by a new trial and an acquittal he saved his right to practice, because a revocation of license cannot be accomplished without a certification of conviction. So the doctor returned to Detroit and resumed his career of consistent infidelity to the ideals of his profession and went his way until the law overwhelmed him.

This time the raven croaked in earnest. Unfortunately, while the eminent specialist remains in Marquette Prison he cannot lose his license, because, being in jail, he is unable to appear before the State Board of Registration in Medicine. But when he is once free there will be no technical disabilities to interfere with proper disposition of his case and the man, whose oft-proclaimed iniquity is a smell to heaven, will be prevented from continuing butchery in the disguise of a surgeon. (Detroit Saturday Night, Dec. 13, 1919).

Colonel H. A. Metz, president of the H. A. Metz Laboratories, Inc., has donated the necessary funds to the Volunteer Hospital, of New York, for the

installation and development of a urological and syphilitic department, both in the hospital and its dispensary. It is the hope of Colonel Metz that the department will not only be able to do the usual ambulatorium and bedside work of such a subdivision but that it will also engage in research work which may lead to preventive measures and to treatment to lessen the evils of syphilis, for the betterment of the race.

This donation by Colonel Metz is in keeping with his action in developing a large scientific organization in his laboratories in Brooklyn. He has on his staff a number of eminent biologic and physiologic chemists who are engaged in research work, not only in connection with Salvarsan and Neo-salvarsan, but other products, quite foreign to the arsenicals, are being studied and developed by these experts.

The Abbott Laboratories of Chicago, have been using half page space in this Journal. Their success warrants them in using a full page at this time. This evidence that the readers of this Journal are careful to patronize our advertisers is gratifying, and is a tribute to the policy which this Journal long since adopted, of publishing in its advertising pages only such medical products as have been accepted by the Council on Pharmacy and Chemistry.

The readers have come to know that this Journal protects them; and as a consequence they may unhesitatingly purchase the products which are advertised in this publication.

In answering the Abbott advertisement, each reader should use the coupon attached to the page advertisement, so this Journal will receive credit for the inquiry.

Dr. A. F. Kingsley, for eight years the Secretary of the Calhoun County Society, declined re-election at the last annual meeting of that organization. Dr. Kingsley, by his activity and organizational ability, was very material in causing his county society to attain a splendid record in meetings and community influence. Dr. Kingsley also inaugurated the Society Bulletin and edited it for six years. We acknowledge the splendid co-operation he has always subscribed to the state society and his promptness in sending in reports. The *Journal* knows he will continue his activity in society affairs and extends its thanks for his past labors.

At the recent convocation of the American College of Surgeons the following Michigan surgeons were elected to fellowship:

J. A. Attridge, Port Huron; R. I. Busard, Muskegon Heights; E. I. Carr, Lansing; B. N. Colver, Battle Creek; W. F. Finton, Jackson; A. F. Fischer, Hancock; C. B. Fulkerson, Kalamazoo; A. J. MacKenzie, Port Huron; M. M. Peet, Ann Arbor; A. B. Poppen, Muskegon; B. B. Rowe, Saginaw; A. B. Smith, Grand Rapids; F. N. Smith, Grand Rapids; E. D. Wilbur, Kalamazoo; R. C. Winslow, Battle Creek.

Northwestern University has secured an option on nine acres of land on the lake front at Chicago Avenue, Chicago, on which it is planned to erect within ten years buildings for its Departments of Medicine, Dentistry, Law, and Commerce. These buildings are to cost approximately \$1,350,000. It is expected eventually that on the Medical School alone \$2,500,000 will be expended. To carry out these plans the University has begun a campaign to raise \$25,000,000, half of which it is expected will be obtained by June, 1920.

The Detroit Chapter of the American Officers of the Great War held an organization meeting at the Detroit Board of Commerce on Tuesday evening, December 2, 1919. Doctors Angus McLean and Frank Walker were elected to the Board of Trustees (composed of five men). This organization continues until the National Officers Meeting to be held in Detroit, September, 1920. Some two hundred members signed the constitution as charter members.

On October 15th, 1919, Surgeon-General William C. Braisted of the U. S. Navy Medical Corps was elected an honorary fellow of the Royal College of Surgeons of Edinburgh. At the same time the Director Generals of the British Medical Service and of the Belgian, French, Italian, and Japanese medical services were honored with membership.

Doctor Bertrand L. Jones, formerly first assistant at the State Psychopathic Hospital at Ann Arbor, has located in Detroit. He is Chief of the Neurological Out-Patient Department at Harper Hospital and Attending Neuro-Psychiatrist at the Receiving Hospital, Detroit.

The destruction by fire of the Mercy Hospital, Big Rapids, and the loss of the lives of three patients was a lamentable affair. The cause of the fire remains undetermined. Plans for the erection of a new hospital are under consideration.

Representatives of the several hospitals of the state held a meeting in Lansing on Dec. 12th and organized a state hospital association, electing Dr. Warren Babcock of Detroit as its first president.

If you like this issue and want similar ones you must aid us in our advertising campaign by patronizing those who advertise with us.

Please note the new ads in this issue. To retain them we invite and urge that you patronize these advertisers.

Dr. W. C. Kools, of Holland, and Miss Wilma Denabel were married in Kalamazoo during the latter part of November.

Dr. C. A. Teifer, of Muskegon, has resigned as surgeon for the Continental Motor Co. and entered private practice.

The physicians of Monroe have organized a social club for frequent social and scientific meetings.

Dr. and Mrs. Noah Bates, of Flint, celebrated their 60th wedding anniversary on Dec. 7th.

Dr. E. B. McDaniel has left Crystal Falls and has gone for a five year trip and stay in Siam.

Dr. E. J. Greer, of Pontiac, has moved to Oxford.

Dr. T. R. Whitmarsh has located in the Soo.

Dr. W. C. Hobeke has located in Kalamazoo.

Dr. J. G. Webster has located in Marlette.

COUNTY SOCIETY NEWS

It is the Editor's desire to have this department of the Journal contain the report of every meeting that is held by a Local Society. Secretaries are urged to send in these reports promptly

BARRY COUNTY.

The Barry County Medical Society, after a period of three years of passed meetings, resumed its meetings on Dec. 12, 1919, and elected the following officers for the ensuing year:

President—Dr. C. H. Barber.

Vice-President—Dr. E. T. Morris, Nashville.

Secretary-Treasurer—Dr. A. W. Woodburne.

Delegate—Dr. G. W. Lowry.

Alternate—Dr. Swift, Middleville.

Medico-Legal—Dr. E. T. Morris, Nashville.

Board of Directors—President, Vice-President.

Secretary-Treasurer, Medico-Legal Representative and Dr. Lowry making five in all.

Next meeting to be held January 9, 1920.

GENESEE COUNTY.

On Wednesday, Nov. 5, the Genesee County Medical Society met at noon luncheon with upwards of 60 members present. Dr. H. E. Randall, in his Presidential address, referred to the splendid spirit of harmony existing in this Society and to this he attributed the prosperity of the profession here. He recalled the rich heritage of knowledge left to us by our predecessors, and stated that for this reason every doctor owed a debt to the profession at large. Doctors without the stimulus of the Medical Society become intellectually lazy. We can do better work by judicious reading, by frequent consultations, and by attending medical meetings. He believed that we as a profession were largely responsible for the various cults springing up, and urged us to make good use of all our therapeutic resources, including modern Psycho-Therapeutics. He stated that the profession should be active in public work of an educational nature, such as the Red Cross, Boy Scouts, and instruction in first aid work. He made many valuable suggestions for the work of the Society, and urged the members to become more active in submitting clinical reports of interesting and obscure cases.

Dr. Plinn Morse, Pathologist of Harper Hospital, Detroit, gave a most interesting and instructive talk on "The Prognosis of Nephritis." He briefly reviewed the newer Physiology of the Kidney, described the more reliable functional tests, and showed their value in making a correct diagnosis and safe prognosis. The address was well illustrated by charts and lantern slides.

The Society again met on Wednesday, Nov. 19, 1919. Five new members were elected. Dr. Wm. Lyon of Flint spoke on "The Treatment of Hernia in Infancy." He clearly described the newer methods of curing Hernias by simple means in infancy, and gave the indications for radical surgical intervention. Dr. Angus McLean of Detroit gave an address on "Goitre, with special reference to its metastasising effects." He showed some interesting pathological specimens and lantern slides. Of special interest were case reports of metastases to bones and other tissues from benign Thyroid Neoplasms. These might destroy life either by direct pressure or by becoming malignant. For this reason, he urged the prompt removal of all diseased Thyroids.

W. H. Marshall, Secretary.

KENT COUNTY.

The thirteenth meeting of the Kent County Medical Society, 1919, was held at the Hotel

Pantlind in the afternoon and evening of Nov. 25. President H. J. Vandenberg presiding.

On account of delay in beginning program regular order of business was waived.

The first and second papers by Drs. Slemmons and Brook were on the subject of Contagious Diseases.

Dr. C. C. Slemmons gave an interesting talk on the subject of Diagnosis of Measles, Scarlet Fever, Small Pox and Chicken Pox, in which he emphasized his individual experience in the diagnosis of these diseases. On account of his long experience in the capacity of health officer of our city his opinions lend conviction to his statements.

Dr. J. D. Brooks emphasized the need of giving antitoxin early in the course of diphtheria and giving it in large doses and in severe cases pointed out the advantage of giving it intravenously.

Discussed by Drs. McCall, Rigterink, Spencer, Strong, Wells, Williams, Fuller, Johnston, Slemmons and Brooks.

Dr. J. D. Bruce gave a very interesting and instructive talk on "Some Factors in the Mortality of Middle Life" in which he laid special stress upon the influence of blood pressure on longevity.

Discussions by Drs. Wells, Johnston, Whinnery and Bruce.

Dr. C. H. Johnston described a "New and Easily Applied Test for Hyperthyroidism" which consists in injecting one-half cc. of adrenalin sol and frequently observing the blood pressure which is quickly raised in case hyperthyroidism is present.

Discussed by Drs. Smith, Corbin, Brook and Williams.

At the evening session a dinner was enjoyed by some sixty members of Kent, Ionia and Ottawa counties at 6:30, after which the speaker of the evening gave a very clear and concise exposition of the subject "The Present Status of Surgery of the Breast."

Discussed by Drs. Campbell, Rigterink, Murites, Johnston, McBride and Smith.

Dr. Crane followed Dr. Smith with a very interesting account of his experiences in German Prison Camps during the world war, exhibiting many pictures of German officers.

The closing talk of the evening was given by Dr. F. A. Boet. Dr. Boet touched many humorous points and a few serious ones, some of which merit free discussion at a date when there is abundant time at the societies disposal.

There being no further business the meeting adjourned.

SANILAC COUNTY

The Nineteenth Annual Meeting of Sanilac County Medical Society was held in the Court House, Sandusky, Wednesday, Dec. 17th, at 1:30 P. M., for the purpose of electing officers for the ensuing year. The following officers were elected:

President—John E. Campbell, Brown City.
Vice-President—J. C. Webster, Marlette.
Secretary-Treasurer—J. W. Scott, Sandusky.
Medico-Legal Officer—D. D. McNaughton, Argyle
Delegate—C. G. Woodhull, Marlette.
Alternate—J. C. Webster, Marlette.

J. W. Scott, Secretary.

Book Reviews

NERVOUS AND MENTAL DISEASES. By Archibald Church, M.D., Professor of Nervous and Mental Diseases in Northwestern University Medical School, Chicago; and Frederick Peterson, M.D., formerly Professor of Psychiatry, Columbia University. Ninth edition, revised. Octavo volume of 949 pages, with 350 illustrations. Philadelphia and London: W. B. Saunders Company, 1919. Cloth, \$7.00 net.

The ninth edition of a work that has long occupied the eminent position this book has, calls for no further review. We simply renew our approbation and congratulations. It is made to impart the latest approved opinions and viewpoints. It should be in the library of every doctor.

A TEXT-BOOK UPON THE PATHOGENIC BACTERIA AND PROTOZOA. FOR STUDENTS OF MEDICINE AND PHYSICIANS. By Joseph McFarland, M.D., Professor of Pathology and Bacteriology in the University of Pennsylvania. Ninth edition, thoroughly revised. Octavo of 858 pages with 330 illustrations, a number of them in colors. Philadelphia and London: W. B. Saunders Company, 1919. Cloth, \$4.75 net.

This ninth edition, almost completely revised, is thus brought up to date and provides us with a most reliable reference, text and guide. This is a work that is valuable to the surgeon and practitioner as well as to the laboratory worker. It is indeed a most practical and scientific work and modern in every detail. We congratulate the author and publishers.

MANUAL OF OBSTETRICS. Edward P. Davis, M.D., F.A.C.S., Professor of Obstetrics Jefferson Medical College, Philadelphia. Second edition, cloth, 478 pp. W. B. Saunders Co., Price \$2.50.

Including the newer obstetrical procedures this second edition of what has proven to be a most valuable manual now attains the position of being the best manual on the subject. Comprehensive, practical and modern in every paragraph, it supplies one with a guide that will enable him to arrive at a wise decision in the modern application of approved obstetrical principles.

Miscellany**AN UNNECESSARY EVIL**

Diphtheria, the terror of our childhood days, is now recognized as an unnecessary evil. The fight of the health officials against diphtheria has been reduced to a battle against ignorance. If every parent could know the facts concerning the prevention and cure of this bane of child life, diphtheria would soon be relegated to its proper places among the obsolete diseases.

Then why do so many patients die from diphtheria? There are several reasons. The principal one is that many die through carelessness or neglect in the same manner that more deaths occur from measles than scarlet fever. There was a time when disease and untimely death were looked upon as inevitable happenings—mysterious visitations imposed upon mankind by an all-wise Providence. Fortunately, the advance of preventive medicine has demonstrated that heaven helps those who help themselves, and that a submissive knee need not be bent to communicable diseases.

Diphtheria killed 270 Detroit children in 1918. At present there is a prevalence of diphtheria in mild form, the number of cases being considerably above normal. Because of the mildness of the attack and the unusual number of cases, the department is experiencing considerable difficulty in enforcing the quarantine. It has been necessary to arrest several violators. The minimum court fine is \$25. As a rule dread of the law is greater than dread of the disease and a fine is a positive "cure." During the past month eight quarantine violators were taken into court by the health quarantine officer. None escaped punishment and one woman drew a fine of \$100. Police Justice Cotter has issued a warning that future violators will be sentenced to jail for periods ranging from 30 to 90 days, without the option of a fine.

The "carrier" cases present a problem. A "carrier" is one who is not clinically ill, but who has the diphtheria germs in the nose or throat, as revealed by bacteriological examination. Such cases may be "carriers" today and clinical cases tomorrow; or they may be dead before the parents are willing to admit that the child has diphtheria.

Frequently children are discovered with a positive culture, but no clinical evidence of illness. The parents demand to know why the family is isolated—the father wants to go to work, the mother wants to shop, Tillie must go to the "movies," and Johnny wants to play with the

other boys instead of remaining indoors. The health department is blamed for enforcing "foolish" rules and complaints are filed.

"My Johnny is as well as I am," says the father. "The health department is all wrong. They say he has diphtheria, but I know he ain't and I've been a citizen of Detroit for 40 years."

Of course, when the parents feel that way about it, there is pretty good reason to believe that Johnny will not remain long in "durance vile." He will be out playing with the other children in the neighborhood and soon the same story will be repeated in several homes in that immediate vicinity. Is it any wonder that diphtheria spreads?

Science has provided both a prophylactic and a cure for the disease. Ignorance and carelessness are the barriers against which medical science is helpless in effectively checking the spread of the disease. Children can be vaccinated and protected against diphtheria almost as effectively as they can be protected by vaccination against smallpox.

All persons are not susceptible to the disease. A small proportion of children are immune from birth and a large percentage during the nursing period. At the age of one year about 30 per cent. are non-susceptible and the percentage of immunes increases as children grow older until at the age of 20 immunity extends to perhaps 85 per cent. This is the reason that so few cases develop in adults.

Not content with furnishing both a preventive and a cure for diphtheria, science has taken a further step by providing a means to determine whether or not a person is susceptible to the disease. This method of determining immunity is known as the Shick test. It is very simple and consists in injecting a few drops of prepared diphtheria toxin into the skin and then watching for the appearance of the characteristic red spot where the injection was made. If such a spot does not occur within two or three days it shows that the person can not catch diphtheria. There is no pain, soreness or sickness connected with the test.

For those in whom the characteristic redness appears and who are therefore known to be susceptible to diphtheria infection, physicians now recommend a course of preventive injections similar to those which have proven so successful against typhoid fever. This protective treatment consists of three small injections of toxin-antitoxin, a week apart. There is no sore such as follows vaccinations against small pox and the injections are harmless. Even when diphtheria develops there is no reason for its terminating fatally, provided antitoxin be administered soon enough and in sufficiently large dose.

The prophylactic dose varies from 1000 to 3000 and the curative dose from 5000 to 20000.—(Bulletin of Detroit Board of Health, November 1919.)

ALCOHOL AND CRIME.

M. J. Rowe, M. D.

With such almost universal distrust of statistics it seems best to subscribe to the belief generally held in clinical medical studies, that the careful study of a small group is more enlightening than the superficial survey of a mass of material. Anyone who has considered the problems of the inefficient, whether he is particularly interested in the physically, the mentally, the socially or the industrially inefficient, must admit that alcohol has its evil effects; but we are surely not warranted in charging all of the evils of society to alcohol. We are justified, however, in believing that 60 per cent. of all crimes of violence are directly due to alcohol; that half the crimes of sex are due to alcohol; that possibly 10 per cent. to 15 per cent. of the premeditated crimes of acquisitiveness are the result of alcoholic excesses and that 10 per cent. of the insanity is due to alcohol and that by reason of the ideas peculiar to these patients, they are all potentially criminals; that many crimes are committed by the feeble-minded, whose alcoholism is only a symptom; that alcoholism and criminal acts are both symptoms of some forms of insanity; that alcoholism does excite to violence some insane and epileptics who would be harmless if they had no access to alcohol, and that the state annually spends over one-third of a million dollars in looking after those who come into contact with the law because of their alcoholic habits.

And finally, we must conclude that the effect of alcohol varies with the individual susceptibility and that an inherent defect of the mental makeup must be present in those cases where excesses and other untoward effects occur.—(Jour. of Delinquency, July 19.)

NOTES ON RE-AMPUTATION.*

A. E. Chisholm, F.R.C.S. Edin.

Late Captain R.A.M.C. Edin.

Some reasons for re-amputation.

1. Adherent scar with weak or partial healing. If the scar is terminal, and especially if adherent to bone, it is apt to become irritated by pressure of the artificial limb. If lateral and adherent to the bone near its end, there is apt to be trouble from dragging. Such scars may break down. "A large or small adherent scar is not necessarily an indication for re-amputation. Many cases with an adherent thin scar do well—better than they would with a better scar and a

*The British Medical Journal, July 19, No. 3055.

shorter stump. It is when the stump is conical and has a large terminal scar or ulcer that a re-amputation may become necessary."

2. A chronic granulating surface, especially if terminal and near the end of the bone, is very likely to lead to weak and unsatisfactory healing, with adhesions to the end of the bone, or healing may fail altogether.

3. The presence of sinuses. Huggins says: "No aseptic operation should be performed on a stump until all sinuses have been healed for two or three months." I hesitate to express an opinion contrary to one with so large an experience, but I think that at least in cases with very mild sepsis in the sinuses, much time may be saved and a good result obtained by re-amputation, provided certain precautions are observed.

4. Sequestra. It is usually wiser to re-amputate than to be content with removal of the terminal sequestrum; time will thus be saved as the separation of the sequestrum alone be performed, the resulting end of the bone is likely to be irregular and ill adapted for weight bearing. The operation.

1. Avoid a terminal scar.

2. It is rarely wise or necessary to include muscle in the flaps. A good fibrous pad is formed between the skin with its integuments and the sawn end of bone.

3. Re-amputate clear of the disability for which a re-amputation is being performed, and try to make sure that no further operation will be necessary. The object of re-amputation is to get a good, sound, serviceable stump. It is far better to sacrifice a little extra bone, provided it can be spared, than to risk a poor result with the possibility of yet another re-amputation having to be performed some weeks or months later, just because the operation has been too close to or within the danger zone. The flaps should be cut clear of the scar unless there is some real reason in a special case against such a procedure. The scar especially should be avoided if there is the slightest suspicion of sepsis.

4. Re-amputation should not be performed in presence of an active sepsis wound. Healthy granulation is not a contra-indication, but a really septic granulation surface should be considered a danger signal. The folly of hastening matters in such cases has been proved.

5. If the wound fills up with clot—example, after a reactionary hemorrhage, it is well to open it right up under a general anaesthetic, clear out the clot, re-suture and drain in the usual way. Otherwise there will be great risk of a septic state ensuing.

6. If skin is scanty, and if it is important to preserve the length of the stump with a view to future function and fitting, extention may be applied by means of glue or strapping stretching from the stump to some form of wire splint.

This may be in use for days or even weeks prior to operation, and a considerable gain may be achieved.

7. In amputation a short distance below the knee it is well to apply a posterior splint before the patient comes out of the anaesthetic, for there is a great tendency for the knee to assume the flexed attitude of rest, and, if convalescence be delayed, a certain amount of contracture of the hamstrings, often difficult to overcome, may take place.

8. If sepsis appears in a mild form after operation, fomentations or Carrels treatment may be applied for a few days.

9. In amputations below the knee the anterior edge of the tibia should be bevelled so as to prevent the sharp edge from pressing on the anterior flap. It is important also to divide the fibula about a quarter of an inch higher up than the tibia, otherwise fitting of the artificial limb will be interfered with. According to Huggins it is important to preserve the interosseous membrane so as to prevent outward displacement of the fibula.

OVERLAP OF SO-CALLED PROTOPATHIC SENSIBILITY AS SEEN IN PERIPHERAL LESIONS.

Conclusions—

1. The area of prick pain supplied exclusively by an individual nerve is far less than the accepted sensory distribution of that nerve.

2. The area between the border of exclusive supply of prick pain of an individual nerve and the border of its accepted sensory supply constitutes the area of algæsic nerve overlap.

3. When nerves serving adjacent areas are severed, sensibility to prick pain between these areas is not present after injury, nor does it return before the sense of touch.

4. When a region in the area of sensory distribution of a severed peripheral nerve is sensitive to prick pain, and this region is adjacent to another nerve area, if this nerve be severed, complete analgesia results in the previous sensitive region.

5. When sensibility to prick pain is present or returns in the area of possible overlap on the sensory distribution of a severed nerve, subsequent resection and suture of this nerve does not change the general extent of this sensitive area, although the borders may be at times slightly enlarged or diminished. That is, the pain sense returned or present before the operation was not due to partial regeneration.

6. The laws governing the assumption of function by nerves adjacent to a severed nerve are unknown.

7. Handling and resection and suture of previously divided nerves changes the condition governing the function of overlapping nerves, often initiating greater function.

8. Evidence of the assumption of function by nerves adjacent to a severed nerve is not present immediately following the nerve injury, but gradually shows itself at a later date.

9. The early return of the sense of prick pain before the return of sense of touch is not due to temporal dissociation of epicritic and protopathic sensibilities, but is due to the assumption of function by adjacent overlapping nerves.

10. The areas of overlap may be determined with fair accuracy and return of sense of prick pain in those areas can not be interposed as a sign of regeneration of the divided nerve.

11. The changes in prick pain following division of a single nerve are not a safe basis for conclusions regarding regeneration of that nerve.

12. Only when a group of nerves is divided at the same time can the studies of sensation be used in the interpretation of regeneration of the nerves. Under these conditions only that part of the analgesic area may profitably be studied which is removed from the effect of overlap from adjacent nerves. On the other hand, if return to sensibility to prick pain occurs on the border of an uninjured adjacent nerve, this return to sensibility does not indicate regeneration of a nerve.

13. Return of sensibility to prick pain can be used clinically for the determination of nerve regeneration only when it is accompanied by return of tactile sense or when it occurs outside the area of possible overlap of adjacent nerves.

—(Arch. of Neur. & Psych., December 1919, L. J. Pollock.)

THE EDUCATIONAL TREATMENT OF DEFECTIVES.

By Alice M. Nash, Principal, School Department and S. D. Porteus, Director of Research, Training School, Vineland

Summary.

1. In a great many cases the special class fails either because it is not fitting the defective for any occupation or because he does not follow in after life the occupation for which he has been trained.

2. Children vary just as much in their capacities for manual training as they do in scholastic abilities. In the great majority of instances special classes are not paying attention to this fact. Teaching a defective some scraps of woodwork or basketry is not helping very much to solve the question of his ultimate self-support.

3. There are indirect advantages of special class work with defectives, the main one being that the regular grades may do better when the feeble-minded are eliminated.

4. The purpose of this paper is to put down Vineland's educational experience. Its plan is to take each subject in turn and to attempt to justify

its position in the curriculum of the special school or special classes.

5. An important point is the right selection of children for training in the various departments. For scholastic training the Binet tests give the best basis of classification. For industrial abilities the Porteus tests give the best indications.

6. Some labor-saving rules that have been evolved from our experience are:

(1) Children two years or less mentally (average Binet-Porteus age) are excluded from kindergarten because they are found to make no permanent gain.

(2) Children of seven years and less, Binet age, make no use of reading, whether for pleasure or profit. Children with I. Q.'s below 50 should not be given any instruction in ordinary school subjects at all.

(3) As regards number work, defectives mentally less than 9 years per Binet, unless displaying special aptitude, should be given only the most elementary work. Operations involving the use of pen and paper are useless for such defectives. They either do not use or do not understand such operations.

7. Needlework is one of the most practical occupations for defectives because it suits the middle as well as the higher grades, the equipment is cheap, there is ample demand for workers, and finally, it must eventually contribute, if not to self-support, at least to self-help. The best work is not always done by those grading higher per Binet.

8. Woodwork is one of the most attractive of occupations for defectives, but its value is seriously limited by the fact that the trades which it leads to are too highly skilled for the defective to achieve competency in them. A few with special aptitudes may find scope here, but, for the majority, it must remain hobby work.

9. Domestic training has great value because it has range enough for all kinds of defective ability and it presents to the higher grades a means of livelihood. Within an institution it is essential to have well-trained workers.

10. Basketry is one of the poorest means of training, because it is slow and unprofitable, and has no future as regards the child. It is much in favor because children's work may provide an attractive exhibit and it is, to certain children, a pleasureable occupation. The defective who can and does earn his living hereby is very rare.

11. School gardening on a practical scale is not possible in the city school systems where most of the special classes are. It is fine work for children, but suffers from the fact that farm labor to which it leads, is very often drudgery from which the high-grade defective quickly escapes to take up easier and better-paid work as a factory hand.